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national society for clean air

136 North Street, Brighton BN1 1RG. England

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AIR





Electricity-the good neighbour

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Central Electricity Generating Board
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CLEAN AIR

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INTERESTING TIMES

In view of the public spotlight turned on air pollution (or acid rain as it is now widely known!), it seems strange that in the 1970s there were those in the Society who wondered what more there could possibly be for us to do. But the past two or three years have brought a burst of EEC activity on air pollution, and as its focus on our issues has highlighted the relevance of a National Society for Clean Air, we have reaped the benefit.

Despite some belt tightening by industry and considerable enforced cut-backs by local authorities, we have lost few members and gained others. At both regional and national level our meetings have rarely been better attended. The Society and its members have taken up the challenge presented by the heightened level of interest in our work. We have devoted considerable time and energy to debating and, as far as possible, resolving contentious issues and have delivered our public pronouncements with ever growing conviction. If we are not constantly in the news, the news about us has been good; people believe that we represent the public interest in clean air. We have been honest and resolute in our opinions, free of government interest and prepared to withstand outside pressures.

The Society's energetic approach is typified by its new Noise Committee, which has consolidated its first six months of work by producing an action plan on noise in converted flats, and by giving written and oral evidence to the House of Lords on motorcycle noise. Members of the Noise Committee have willingly taken on a research and action remit covering particular subjects and their enthusiasm and hard work are paying real dividends in establishing the Society's credibility in the field of noise control. With a similar level of commitment in many of the Society's Divisions, we have now reached an excellent basis for expansion.

Overall, our credibility is reflected in the change of emphasis in the letters received from members of the public. Previously, people wanted information or help with a specific problem. Now even school children write saying, "I want to help you; it is my world too and I want to make it a better and healthier place to live in." We can be proud of creating such sentiments in the next generation. We should cherish the image that gives rise to them.

1984 HARVEST BURN SURVEY

A. COMMENTARY

The combination of extreme weather conditions and air pollution during the 1983 harvest created particularly widespread problems, affecting even cities such as Oxford, London and Stockton-on-Tees. In order to get a complete picture of the situation in 1984, the NSCA surveyed over 260 local authorities (LAs), many of which are not in recognised cereal growing areas. While, overall, conditions were better than in 1983, the 1984 season had its share of exceptional weather. The worst effects combined pollution from straw burning with a 3000' temperature inversion, which occurred over Southern England in August. The hot, dry spell broke before the end of the harvest, bringing heavy rain to some areas. As a result, some straw/stubbles were not cleared by burning at the usual time. Such variable weather, coupled with the wide canvass undertaken, accounts for the high number of LAs (105 out of 265) reporting few or no problems. Annex 1 lists questions put to local authorities, Annex 2 lists responding LAs.

The main point to emerge from the survey is that despite the new bye-laws and (in some areas) better weather conditions than in 1983, problems with straw and stubble burning are still widespread. 160 LAs reported problems, and of those 139 *had* adopted the new bye-laws. In fact, those local authorities which conscientiously adopted and implemented the bye-laws were put to a lot of hard work for very little return in the way of improved pollution control and reduced level of complaints. The bye-laws were well tested in relation to air pollution, under favourable conditions. Maximum publicity was given to the need to prevent nuisance and comply with the bye-laws and the NFU Code, and there was co-operation from all sides, including most farmers. But the bye-laws were found wanting.

They did bring about some improvement in control, mainly in fire prevention: a number of LAs reported finding the new bye-laws effective, but said that their scope was too limited — they worked for fire prevention but not for the abatement of smoke and smuts. Realistically, many local authorities admit that it will be difficult to sustain the level of effort given in 1984 to ensuring enforcement of the bye-laws. They fear, too, that as the impact of publicity wanes, problems will become even greater. Hence the high number of authorities (140 in all) which consider the bye-laws inadequate, and the even higher number (144) which view a ban as the only way to deal with the problem. This is a **considerable increase** over 1983, when 65 LAs supported NSCA policy for the introduction of a ban.

Of the specific problems LAs reported with the bye-laws, the NSCA notes with concern that its main criticism of the draft bye-laws — that no forecast windspeed limitation was included — was in the event fully justified. LAs said that the bye-laws did not prohibit burning in adverse wind conditions, and noted that fires leapt firebreaks in high winds.

The system of notification of intention to burn was far from ideal — fire service lines were jammed as they were forced to act as a "logbook" for farmers. LAs found that they had insufficient time to take effective action (e.g. checking conditions, monitoring compliance with bye-laws) even when they were notified.

Local authority manpower (stretched to the limit in rural areas at the height of the holiday season) was often inadequate for more than a reactive role, although some LAs coped well, e.g. by setting up an answerphone line specifically for notifications, visiting farms and discussing the bye-laws with all farmers in the area before harvest. Where the job was done properly, it proved extremely manpower intensive and, as already noted, LAs doubt whether that level of activity can be maintained year by year.

The report on compliance/enforcement problems gives some guide to difficulties, but a clearer picture is provided by the thousands of specific and general complaints from members of the public: and it should be remembered that complaints actually logged are usually the tip of a far bigger iceberg, since most people tend not to complain even when annoyed.

Where LAs considered that breach of bye-laws was serious enough to warrant prosecution, there were several difficulties in the way of bringing cases to a successful conclusion. Officers sometimes found it impossible to obtain first hand "own eyes" evidence, since powers of entry are not included in the bye-laws. It proved difficult to counter claims that fires were started "accidentally" or "by vandals." Because of the large number of LAs seeking to adopt the new bye-laws, some were stymied from the outset because they were unable to get adoption through the Home Office until the burning season was almost over! It also proved important for *a//* LAs around a cereal growing area to adopt the bye-laws, since the source of the nuisance often was not within the borough where problems occurred. Of the crops *not* covered in the bye-laws, the burning of oil seed rape stalks, in particular, caused major problems and although the Home Office say that future bye-laws will cover this non-cereal crop, that was no help in 1984.

Where prosecutions were successfully taken, the efforts LAs took to secure convictions have in some cases been rewarded by minimal fines imposed by magistrates: e.g. £25. At that level it *pays* farmers to burn badly rather than incorporate ash and abide by bye-laws, and it certainly provides no incentive to bale straw and find alternative uses for it. (Note: a list of LAs with prosecutions pending is given in Annex 3.)

As regards the future operation of the bye-laws, many fears were expressed. The main point is their inadequacy, especially for containing or minimising air pollution. This was neatly illustrated by Easington DC (Co. Durham): smoke made visibility so bad that police were called in to direct traffic and the fire brigade had to extinguish the fire — but the new bye-laws had been observed to the letter. Thamesdown BC reported that a burn, entirely complying with the bye-laws, caused smoke to blow across the M4 — headlights were needed as a result. Blaby DC told us that a burn, properly notified and supervised, caused smuts to fall on a nearby cauliflower field belonging to a market gardener. Some 25,000 cauliflowers were lost. The other major fear expressed is that as the impact of the publicity surrounding the new bye-laws wanes, the compliance situation will deteriorate, increasing demands on LAs. Even in 1984, some farmers professed ignorance of the bye-laws.

Slight hope for the future stems from a few reports that farmers were deterred from burning by the undoubted complexity of the bye-laws' provisions. More research and investment has been directed towards alternative uses for straw, and more is needed. But with real determination a ban is feasible if a planned introduction can be effected. In that context, it is interesting to note the comments of one East Anglian LA, which reported heavy pollution, breach of the bye-laws and many complaints from the public: "The Council is against banning the practice. It favours 'research of an alternative means of disposal'. The Council represents an area which is predominantly rural. Many Members of the Authority are farmers or are associated with farming. They represent farmers' views. The Authority's environmental health officers favour a ban on the practice."

Finally, the National Society for Clean Air was not alone in conducting a survey of local authorities' experience with the 1984 Harvest Burn. The Association of District Councils' findings tally well with those of the NSCA, and the ADC concluded "... the model bye-laws introduced last March and adopted by nearly 200 district councils have failed to stop pollution by smoke, smuts and ash".

B. ANALYSIS OF RETURNS

Total no. of local authorities (LAs) responding: 265.

160 LAs experienced problems with the '84 Harvest Burn. Of these, 139 adopted the new model bye-laws. In addition 10 LAs applied to the Home Office to adopt, but did not receive confirmation in time.

105 LAs experienced few or no problems; many of these said that there was no cereal crop growing in their area. Even so, 51 adopted the new model bye-laws, sometimes to be in line with neighbouring authorities. 10 LAs had experienced no problem from burning within their own areas but suffered nuisance from neighbouring boroughs.

LAs WITH PROBLEMS

Bye-Laws

- 1) Out of the 139 which did adopt new bye-laws, 43 required prior notification of both the Environmental Health Dept. and the Fire Service; 28 of the E.H. Dept. only; and 34 of the Fire Service only.
- 2) Some LAs found the model bye-laws inflexible:— any special provision took time to be approved and was often rejected, e.g. oil seed rape to be included; ban on burning within certain distance of town perimeter.
- 3) 2 LAs which had problems decided from the outset not to adopt the new model bye-laws because their provisions were considered to be inadequate.

How effective?

- 1) Of those who expressed an opinion, 38 LAs found the new bye-laws effective; 41 did not. In addition, 38 found the provisions effective for fire prevention but said they did nothing to abate the hazard and nuisance of smoke.
- 2) Those who did find the bye-laws effective made the following main points:
 - a) ban on weekend/night burning successful, resulting in marked reduction in complaints from public;
 - b) some farmers deterred from burning altogether by the complicated provisions;
 - c) nevertheless, LAs fear that improved situation will not be sustained once publicity wanes.

Compliance problems

31 LAs reported compliance problems, some under more than one heading.

1) **Lack of adequate firebreaks** was reported by 19 LAs, especially round trees and telegraph poles. Some farmers simply broke soil up with cultivator once or twice, or left straw lying on the firebreak, or said they couldn't calculate distance.

2) **Inadequate fire supervision** was reported by 13 LAs. Provision of water tankers on remote fields was a particular problem but other factors were also responsible: one farmer was reluctant to use his tractor to take the water tanker to the field in case his tractor was damaged by fire!

3) **Failure to incorporate ashes** as required was reported by 10 LAs. Some farmers maintained that they had difficulty in interpreting the 36 hr. incorporation requirement.

4) **Failure to notify LA of burn** (when required) was reported by 21 LAs. Some farmers professed ignorance of the new bye-laws despite widespread publicity (LAs without this problem often reported that they or the NFU had contacted every farmer personally, but that this was very time-consuming.) Difficulty also arose when farmers assumed that all LA bye-laws were the same and failed to notify the necessary authorities because neighbours in different boroughs were not required to.

5) **Burning in high winds:** when challenged, some farmers said they were forced to burn in such conditions because the ban on weekend burning had made them short of time.

Enforcement problems

42 LAs reported enforcement problems.

1) **Inadequate staff resources** were a serious problem. Many LAs were only able to respond to complaints and could not undertake any general monitoring of the situation. In particular, burning in the early evening could not be monitored and staff holidays in August made routine surveillance very haphazard. One hour's notification was insufficient for some LAs to arrange monitoring, especially when officers were out of the office all day. In addition, farmers sometimes did not burn at the time stated.

2) **Difficulty in locating burns and gaining access:** officers had no power of entry if ordered off farmer's land. Sometimes information from NFU about farms in district was incomplete and fields could not be located: one LA suggests an OS grid reference should be provided.

- 3) **Evidence of contraventions destroyed before officers could investigate:** burns finished, fields ploughed over, etc. Also complainants were in some cases reluctant to appear as witnesses for prosecution.
- 4) **Farmers disclaiming responsibility for fires,** saying that vandals had lit them, was difficult to disprove. (Some farmers blamed increased vandalism on prolonged burning period caused by weekend ban.)
- 5) **EHOs had some problems in assessing adequacy of firebreaks on very large fields.** They also found it difficult to insist on ash incorporation when shallow top soil made it impracticable. It was impossible to enforce 36 hr. ash incorporation period when no prior notice of burning requirement in force.

Criticisms of new bye-laws

- 1) Do not control smoke nuisance or prevent hazard due to visibility reduction on highway. (NOTE: starting a fire within 50 feet of the centre of a road so as to inconvenience passers-by or damage the highway is an offence under the Highways Act 1980.)
- 2) Allow too much time for ash incorporation, so nuisance still results.
- 3) Do not prohibit burning in adverse wind conditions.
- 4) Allow burning to take place near large centres of population.
- 5) Rape, pea, bean, potato haulm etc not covered. (Home Office say rape will be covered by future bye-laws).
- 6) Do not require firebreak around poles or pylons carrying electricity lines — only telegraph poles. Also, firebreak requirement inadequate to protect trees and hedgerows, especially in high winds when many fires leapt firebreaks.
- 7) Fire Brigade notification impractical. Many switchboards at Fire Service HQ jammed with calls. Some Fire Services had therefore requested removal of this clause.

Complaints from the public

157 LAs with problems received complaints from the public; of these, 138 did adopt the new bye-laws, 19 did not. Complaints were as follows:

Char/smut fall out	: 1,282 complaints
Smoke & general nuisance	: 1,276 complaints
Threat/damage to property	: 118 complaints
Threat/damage to wildlife	: 146 complaints
Effects on human health	: 124 complaints
Reduced visibility on the road	: 154 complaints

NOTES

1. Some LAs received so many complaints that they could not keep count:— these have not been included.
2. Letters of complaint often represent neighbours' views too (in one case, 15 households).
3. Total no. of LAs reporting complaints about smuts or smoke: 150. Total no. of LAs reporting other complaints: 100.

Fire Brigade involvement

104 LAs reported that Fire Services were called out to stubble fires, resulting in over 450 separate call outs. In addition, the following County Fire Service figures are of interest:

Cambridgeshire	: 90 call outs
Essex	: 207 call outs
Bedfordshire	: 97 call outs
East Sussex	: 50 call outs
Humberside	: 94 call outs

NOTES

1. Many LAs were unable to provide statistics although reporting that their Fire Services were stretched to the limit.
2. At height of burning season, there were over 200 call outs a day in Herts.
3. In South Holland DC on 3.9.84 burning in gale force winds created havoc for fire brigade — all engines were out attending stubble fires so no ordinary fire cover was available. At times, up to 100 acres were burning out of control at once.

Prosecutions

1) *Breach of bye-laws*

Over 146 prosecutions pending (see Annex 3)

9 prosecutions taken, 7 of which known to be successful. (2 incurred fines of £400 + costs).

2) *Smoke nuisance under Clean Air Act*

3 pending, including 1 taken for rape stubble burning.

NOTES

1. Some LAs found the Clean Air Act impractical to use for prosecutions.
2. 6 LAs opted for warning letters to be sent in '84 but will prosecute in 1985.

Are existing controls adequate?

Yes: 17

No: 111

For fire hazard but not for smoke nuisance: 12

No opinion expressed: 20

Is a ban favoured?

Yes: 111

No: 20

Undecided: 29

NOTES

1. Many LAs reported that the Council had not yet considered formally whether or not to support a ban. These were recorded as "No", but further information could reveal even wider support for a ban.
2. Where the opinion given in favour of ban was that of the Council's Environmental Health Officer, rather than that of the Council, "No" was recorded.
3. A number of LAs both favoured a ban and wanted more research on straw disposal methods first. These were recorded as "Yes", since NSCA policy is to introduce a ban by 1989, allowing time for further R & D into alternatives.

LAs WITH FEW OR NO PROBLEMS

The NSCA questionnaire was circulated very widely and inevitably many LAs reported few or no problems. For completeness, we include an analysis of these returns, although it should be noted that 58 of these LAs reported that there was no, or very little, burning carried out within the council's area.

Bye-laws

Out of 105 LAs, 51 adopted the new model bye-laws. Of these 20 required prior notification of both the E.H. Dept and the Fire Service; 20 required notification of the Fire Service alone. 17 LAs reported finding the new bye-laws efficacious; one reported that bye-laws were not effective. The remainder expressed no opinion.

Complaints from the public*LAs with new bye-laws:*

No complaints at all: 39 LAs.

Some complaints (single figures): 12 LAs.

LAs without new bye-laws:

No complaints at all: 39 LAs.

Some complaints: 15 LAs.
(as follows)

Reduced visibility:	1
Char/smut fall out:	47
Smoke/nuisance:	26
Threat to property:	7
Health effects:	3

NOTES

1. Quite a number of these complaints concerned burns occurring outside the borough.
2. Total no. of LAs classified under "no problems" receiving complaints about smuts or smoke: 23; no. with complaints re. other problems: 8.

Fire Brigade involvement

16 LAs had their Fire Services called out to at least one stubble fire.

Prosecutions: none**Are existing controls adequate?**

Yes: 30

No: 29

No opinion expressed: 46

Is a ban favoured?

Yes: 33

No: 19

Question as yet unresolved by Council: 10

No opinion expressed: 42

In addition to the above figures, one LA favoured a ban on straw burning but not on stubble burning.

QUOTABLE QUOTES FROM THE QUESTIONNAIRE RETURNS

Serious incidents

"Stubble was burnt in a field close to houses when the wind was blowing away from the houses. Within 36 hours the wind had changed completely round and increased to gale force, causing ash lift-off and deposits over a large housing estate." (*Cleveland*)

"Towards the end of September we experienced fairly strong winds ... despite there being firebreaks of the minimum width required, burning straw was being picked up and blown into hedges and adjoining fields. In (another) case the intensity of the fire together with the strong wind resulted in considerable damage by scorching to mature beech trees." (*Bedfordshire*)

"One particular fire was so bad as regards visibility that police were called in by EHOs to control traffic and the fire brigade had to extinguish the fire, even though the byelaws were being complied with." (*Co. Durham*)

"In one incident a burn was out of control and covered three fields, crossing a road and placing two houses and a kennels at risk. Prosecution would have been taken under the new bye-laws, if available, and was also considered under the existing bye-laws although we were unable to obtain corroborative evidence from complainants since the offender was a farmer in local public life." (*Sussex*)

"Experience has shown that piles of straw which appear to be out can later ignite again due to fanning from the wind. One such case caused considerable problems at night when combined with a temperature inversion which resulted in considerable smoke accumulating on some main roads." (*Hertfordshire*)

"The most damaging incident encountered was from a burn which was properly notified and supervised but the smuts fell on a field nearby, containing cauliflowers belonging to a market gardener. It was estimated that some 25,000 cauliflowers were lost." (*Leicestershire*)

"In practice it was at times impossible to say where the smuts (charred debris) were coming from — obviously travelling several miles — and on some days the atmosphere was generally tainted with straw smoke, apparently from no particular source." (*Essex*)

"(An example of) threat to property — a petrol filling station owner was felt to be at risk from an adjacent burn — where the firebreak provisions were observed." (*Hereford & Worcester*)

"On one occasion smoke from a fire was blowing across the M4 in sufficient quantities to cause headlights to be switched on. In all respects, the burn complied with the bye-laws." (*Wiltshire*)

"The considerable drift of pollution from burning means that Gosport, on the southern tip of England, picks up pollution, smuts etc. from the Isle of Wight some seven miles away." (*Hampshire*)

"One complaint was received from Portsmouth (across the Solent) about the pall of smoke from stubble burning." (*I.O.W., Hampshire*)

"Some 20 complaints were received on Monday (3.9.84) when burning was commenced in gale force winds. Fires even leapt firebreaks — No fire cover in LA area as all available fire engines were dealing with stubble fires where up to 60/100 acres were on fire at once." (*Lincolnshire*)

"Burning rape haulm produced dense clouds of smoke." (*Leicestershire*)

Complaints from the public

"Many complainants were vociferous and irate and brought samples of stubble and sooty particles into the office. They were extremely annoyed because of damage to new paint-work and to washing and to fabrics in the home On several summer evenings during August, sunlight was reduced substantially. During hot summer evenings, people want to sleep with bedroom windows open and the smell of smoke caused considerable annoyance." (*Leicestershire*)

"Complaints received to date have increased by no less than 53% and these have tended this year to be more vociferous, if only because the public's expectations have possibly been raised by the promised legislation in the form of bye-laws." (*Northamptonshire*)

"Most (complainants) were simply fed up with the whole business and wanted it stopped." (*Humberside*)

"Exterior property decoration is usually undertaken in the spring or autumn; September and October are most favoured by DIY homeowners. Many were incensed that, once again, their painting was interrupted because of char and smuts." (*Suffolk*)

"I was under the impression that strict controls had been applied to the hazard of stubble burning by farmers. I must have been misinformed, because during last week I had employed some painters to paint the outside of my house, and while the final coat was drying a breeze brought showers of burnt straw onto the still tacky paint. When it eventually became totally dry I tried to remove some of the pieces of burnt straw, but it left the paint in a filthy condition — it will require repainting." (*Extract from letter to CEHO, Oxford*)

Farmers' attitudes

"Many of the Councillors are farmers and do not favour the banning of this activity." (*Staffordshire*)

"Our farm lobby claims that farming is a 7 day a week activity and uses the bye-law "No burning on Saturdays, Sundays and Bank Holidays' to justify rejection of the byelaws and their adoption." (*Somerset*)

"A number of Members of the Council are farmers and I cannot see them supporting a total ban on stubble burning which is said to control disease in cereal crops." (*Humberside*)

"Once or twice around the field with a cultivator or set of disks producing 5-10 metres of broken soil — regardless of what was on the field boundary — was the norm for firebreaks." (*Lincolnshire*)

"In one case a farmer burnt straw and stubble within 10 metres of 2 wooden huts occupied by laboratory workers." (*Nottinghamshire*)

"We noted attempts to get round the bye-laws by baling first then burning bales on a small area of field, i.e. the farmer complied with the acreage section but smoke was equivalent to that from a much larger area." (*Suffolk*)

"(One) complaint was about an incident which occurred over a weekend when a fire became out of control and threatened an area of woodland. The fire brigade was called out and extinguished the fire, but the farmer promptly relit the fire, despite the recommendation of the Fire Officer not to do so." (*Cheshire*)

"At the beginning of the burning season I allowed a rumour to circulate amongst the farmers that (my) Council was using a helicopter to monitor stubble burning. Many farmers mentioned to my staff that they had seen our helicopter flying over. We thought it useful not to deny the rumour!" (*Hertfordshire*)

"How does one prove that a fire was not started one hour before sunset?" (*Norfolk*)

"What will happen in future years when the subject may not be so topical?" (*Essex*)

ACKNOWLEDGMENTS

The NSCA Survey of the 1984 Harvest Burn was designed by **Jane Dunmore**, who also wrote the Commentary. Information from the returns was collated by **Penny Gilbert**.

The Society is grateful to all the local authorities (for names, see Annex 2) who made inputs to this survey; 265 local authorities took the trouble to respond, either by letter or by filling in the Questionnaire, to our request for information on the outcome of the 1984 Straw Burning Season.

ANNEX 1 NSCA Questionnaire

Straw and Stubble Burning 1984

A. NAME of AUTHORITY:

B. *Bye-Laws*

(1) Did you adopt the new Model Bye-laws? YES / NO

(2) If NO to Q(1)

Was this because:

there was insufficient time? YES / NO

they were deemed inadequate? YES / NO

the existing Bye-laws are satisfactory? YES / NO

(3) If YES to Q(1)

a. Do they require:

Environmental Health Department to be notified? YES / NO

Fire Service to be notified? YES / NO

b. Did you introduce any other special requirements?

If so, please elaborate, below:—

c. Did you find them efficacious? (*See Footnote*) YES / NO

For the following reasons:

d. Did you encounter any specific problems in respect of compliance?

e. Did you encounter any specific problems in their enforcement?

f. To your knowledge:

Were ashes generally properly incorporated? YES / NO

Were fires properly supervised? YES / NO

Were firebreaks made properly? YES / NO

C. *Conduct of Burning*

(4) When did burning begin and finish? 84 to 84

(5) When was burning at its height? 84

(6) Did you monitor operations in any way? YES / NO

If YES — please give details:

(7) Did you receive any complaints? YES / NO

(8) If YES, we would be grateful to know numbers relating to:

Reduced visibility on roads

Char/Smut fall out

Smoke and general nuisance

Threat/damage to property

Threat/damage to wildlife and habitats

Effects on human health

If you wish, please give further details as appropriate

- (9) To your knowledge, was the local fire brigade called out to any straw/stubble burning incident? YES / NO
If so, on how many occasions
- (10) Did you prosecute for any breach of the Bye-laws? YES / NO
If YES, please give details:
- (11) Did you prosecute for smoke nuisance under the Clean Air Act? YES / NO
If YES, please give details:

D. *General*

- (12) Bearing in mind that the national weather conditions were not exceptional in 1984 do you, or your Council, nevertheless consider that the existing controls on straw/stubble burning are adequate for "bad" as well as "good" years? YES / NO
- (13) Does your Council favour the introduction of a ban on straw/stubble burning? YES / NO
- (14) We would be grateful to receive any other comments you wish to make.

Compiled by:

Appointment:

Date:

Footnote: Some returns made it quite clear that LAs found this question ambiguous. Some interpreted it as meaning "were the LA's special requirements efficacious?", rather than "were the bye-laws efficacious?"



ANNEX 2 List of LAs responding to the Questionnaire

(LAs which support the introduction of a ban are marked ●)

- | | |
|--------------------------|-----------------------|
| Alyn & Deeside DC | ● Canterbury City C |
| Amber Valley DC | Cardiff City C |
| Arun DC | Castle Morpeth BC |
| ● Ashfield DC | Castle Point DC |
| Ashford BC | ● Charnwood BC |
| Aylesbury Vale DC | ● Chelmsford BC |
| ● Babergh DC | ● Cheltenham BC |
| ● Barking & Dagenham LBC | ● Cherwell DC |
| ● Barnsley MBC | Chester City C |
| Barrow-in-Furness BC | Chesterfield BC |
| ● Basingstoke & Deane BC | Chester-le-Street DC |
| ● Bassetlaw DC | ● Chichester DC |
| Bath City C | Chiltern DC |
| Berwick-upon-Tweed BC | Christchurch DC |
| ● Birmingham City C | Cleethorpes BC |
| ● Blaby DC | Colchester BC |
| Blackburn BC | Congleton BC |
| Blyth Valley BC | ● Corby DC |
| ● Bolsover DC | ● Cotswold DC |
| Bolton MBC | Crewe and Nantwich BC |
| Boothferry BC | Darlington BC |
| ● Boston BC | ● Dartford BC |
| ● Braintree DC | ● Daventry DC |
| Breckland DC | ● Derwentside DC |
| Brecknock BC | ● Doncaster MBC |
| Brentwood DC | ● Dover DC |
| ● Bridgnorth DC | ● Durham City C |
| ● Brighton BC | ● Easington DC |
| ● Bristol City C | ● East Cambs DC |
| ● Broadland DC | East Devon DC |
| Bromley LBC | ● East Hampshire DC |
| ● Broxbourne BC | ● East Herts DC |
| Broxtowe BC | East Kilbride DC |
| Burnley BC | ● East Lindsey DC |
| Bury MBC | ● East Yorkshire BC |
| ● Cambridge City C | ● Eastbourne BC |

- Eden DC
- Edinburgh City C
- Ellesmere Port and Neston BC
- Elmbridge BC
- Enfield LBC
- Epping Forest DC
- Erewash BC
- Fareham BC
- Fenland DC
- Forest Heath DC
- Forest of Dean DC
- Gateshead MBC
- Gedling BC
- Gillingham BC
- Glanford BC
- Gloucester City C
- Gosport BC
- Gravesham BC
- Great Grimsby BC
- Great Yarmouth BC
- Guildford BC
- Halton BC
- Hambleton DC
- Harborough DC
- Harlow DC
- Hart DC
- Hartlepool BC
- Hastings BC
- Havant BC
- Havering LBC
- Hereford City C
- High Peak BC
- Hinckley & Bosworth BC
- Holderness BC
- Horsham DC
- Hounslow LBC
- Hove BC
- Huntingdon DC
- Hyndburn BC
- Ipswich BC
- Kennet DC
- Kettering BC
- King's Lynn & West Norfolk BC
- Kingston upon Hull City C
- Kingswood DC
- Kirklees MC
- Knowsley MBC
- Langbaugh BC
- Leeds City C
- Leicester City C
- Leominster DC
- Lewes DC
- Lincoln City C
- Luton BC
- Macclesfield BC
- Maidstone BC
- Maldon DC
- Malvern Hills DC
- Manchester City C
- Melton BC
- Mendip DC
- Mid Bedfordshire DC
- Mid Devon DC
- Mid Suffolk DC
- Mid Sussex DC
- Middlesbrough BC
- Milton Keynes BC
- Mole Valley DC
- New Forest DC
- Newark DC
- Newbury DC
- Newcastle-upon-Tyne City C
- Newport BC
- North Beds BC
- North Cornwall DC
- North Dorset DC
- North East Derbyshire DC
- North Herts DC
- North Kesteven DC
- North Norfolk DC
- North Tyneside MBC
- North Warwickshire BC
- North West Leicestershire DC
- North Wiltshire DC

- Northampton BC
- Northavon DC
- Norwich City C
- Nottingham City C
- Nuneaton & Bedworth BC
- Oadby and Wigston BC
- Oxford City C
- Poole BC
- Portsmouth City C
- Purbeck DC
- Radnor DC
- Reading BC
- Redditch BC
- Reigate & Banstead BC
- Ribble Valley BC
- Richmondshire DC
- Rochdale MBC
- Rochester upon Medway City C
- Rother DC
- Rotherham MBC
- Rugby BC
- Runnymede BC
- Rushcliffe BC
- Rushmoor BC
- Ryedale DC
- Salisbury DC
- Scarborough BC
- Scunthorpe BC
- Sedgfield DC
- Selby DC
- Sevenoaks DC
- Sheffield City C
- Shepway DC
- Solihull MBC
- South Bedfordshire DC
- South Buckinghamshire DC
- South Cambridgeshire DC
- South Derbyshire DC
- South Hams DC
- South Herefordshire DC
- South Holland DC
- South Kesteven DC
- South Norfolk DC
- South Northamptonshire DC
- South Oxfordshire DC
- South Staffordshire DC
- South Tyneside BC
- South Wight BC
- Southampton City C
- Southend-on-Sea BC
- Spelthorne BC
- St. Albans DC
- St. Edmundsbury BC
- Stevenage BC
- Stafford BC
- Staffordshire Moorlands DC
- Stockton-on-Tees BC
- Stratford-on-Avon DC
- Stroud DC
- Suffolk Coastal DC
- Sunderland BC
- Surrey Heath BC
- Swale BC
- Tamworth BC
- Tandridge DC
- Taunton Deane BC
- Teignbridge DC
- Tendring DC
- Test Valley BC
- Thamesdown BC
- Thanet DC
- Three Rivers DC
- Thurrock BC
- Tonbridge & Malling BC
- Torbay BC
- Torfaen BC
- Tunbridge Wells BC
- Uttlesford DC
- Vale of White Horse DC
- Vale Royal DC
- Wakefield MDC
- Wansbeck DC
- Wansdyke DC
- Warrington BC

- Warwick DC
- Watford BC
- Waveney DC
- Waverley BC
- Wealdon DC
- Wellingborough BC
- West Derbyshire DC
- West Dorset DC
- West Lindsey DC
- West Oxfordshire DC
- West Somerset DC
- West Wiltshire DC
- Wimbourne DC
- Winchester City C
- Windsor & Maidenhead Royal BC
- Woking BC
- Woodspring DC
- Worcester City C
- Worthing BC
- Wrekin DC
- Wychavon DC
- Wycombe DC
- Wyre Forest DC
- Yeovil DC
- York City C

ANNEX 3 Straw and Stubble Burning — Prosecutions Pending

LA	No. of cases	Prosecuted by
Milton Keynes BC	1	LA
South Holland DC	6	LA
Maldon DC	1	LA
West Somerset DC	1	LA
Rugby BC	1	LA
Kingston upon Hull City C	1	LA
West Oxfordshire DC	1 (3 already successful)	LA
Forest Heath DC	2	LA
Mid Suffolk DC	1 (2 already successful)	LA
West Wiltshire DC	1	LA
Salisbury DC	1	LA
Wrekin DC	?	(Neighbouring LA)
Broadland DC	1	LA
East Cambs DC	5	P
South Cambs DC	5	P
Cotswold DC	1	LA
Basingstoke and Deane BC	2	LA
North Wiltshire DC	3	LA
Test Valley BC	2	LA
Bassetlaw DC	n/k	LA
St. Edmundsbury BC	4	LA
Selby DC	6	LA

LA	No. of cases	Prosecuted by
Newbury DC	1	LA
Arun DC	2	LA
Fenland DC	2 +	P + LA
Braintree DC	1	LA
Hambleton DC	n/k	LA
Surrey Heath BC	3 (1 already successful)	LA
Sevenoaks DC	n/k	LA
King's Lynn & West Norfolk BC	8	LA
Bolsover DC	1	LA
South Northants DC	1	LA
Hartlepool BC	2	LA
Scarborough BC	1 (Old bye-laws)	LA
Chichester DC	2	LA
Vale of White Horse DC	5	LA
Wychavon DC	1	LA
Cherwell DC	3	LA
Gedling BC	1	LA
Thanet DC	n/k	LA
Boothferry BC	6	LA
West Lindsey DC	16	LA
North Beds BC	3	LA
Rochester upon Medway City C	?	LA
South Kesteven DC	3	LA
North Warwickshire BC	2	LA
South Oxfordshire DC	c.4	LA
Holderness BC	2	LA
East Lindsey DC	c.20	P + LA
Breckland DC	5	P + LA

LA = Local Authority

P = Police

The Society would be grateful to receive further details of any prosecutions taken in connection with straw/stubble burning in 1984. Please write or telephone Jane Dunmore at the Society's Brighton Headquarters (Tel: (0273) 26313).

LETTER TO THE EDITOR

Dear Editor,

The paper by Cross and Lacey (*Clean Air*, **14**, 3/4) is an excellent example of the insight that can be gained on the causes and effects of air pollution by the careful analysis of empirical data. As the authors remark, the amount of such analysis is small in relation to the vast National Survey data bank and this is a pity. The UK still has a great deal to teach other countries on this subject.

However, I am a little concerned over two aspects of the present study. The authors do not appear to have made (at least in the published paper) an explicit allowance for the inherent inaccuracy of National Survey sulphur dioxide gauges. These gauges were designed for simplicity in use and low cost and they lack the sophistication of those built and operated to laboratory standards. There can also be some interferences with their readings, especially at the lower sulphur dioxide concentrations. I have a suspicion that the inclusion of realistic error ranges in the recorded concentrations might materially alter the significance of some of the correlations derived in the paper. I shall be happy to be corrected on this point if I have misunderstood the methods used by the authors.

My second concern relates to the references in the text to several CEEB papers listed in the bibliography (of which I was co-author of a couple) and the implication that CEEB has "disputed" that high level emissions — e.g. from power stations — make any contribution to ground level concentrations of sulphur dioxide. The latter is certainly not the case and the misunderstanding probably arises from the nature of the CEEB studies reported in the referenced papers. These were all concerned with the analysis of survey results around **individual** power stations and their contribution to **local** ambient concentrations. The papers correctly concluded that individual power stations make only a minor contribution to air pollution levels in their vicinity i.e. out to distances of 10 - 20 km from the source, within which the maximum effect at ground level always occurs. Typically, a modern 2000 MW power station adds only 2 - 4 $\mu\text{g}/\text{m}^3$ to the annual average sulphur dioxide concentrations in the surrounding area, or about one tenth of the average rural background level.

It has always been recognized, however, that **collectively**, all the power stations in the UK contribute a significant percentage to the total background levels. Since electricity generation consumes well over half the fossil fuels burned in the country, this collective contribution is inevitable and well understood. Studies have been made of the likely magnitude of this contribution over the UK. The results of one such modelling study are shown in the attached diagram. This does not attempt to depict local high concentrations in individual urban areas but indicates the probable contours of "background" concentrations, both from all UK sources and from power stations alone. The latter are seen to account for about half the rural background, as anticipated from the fuel burn.

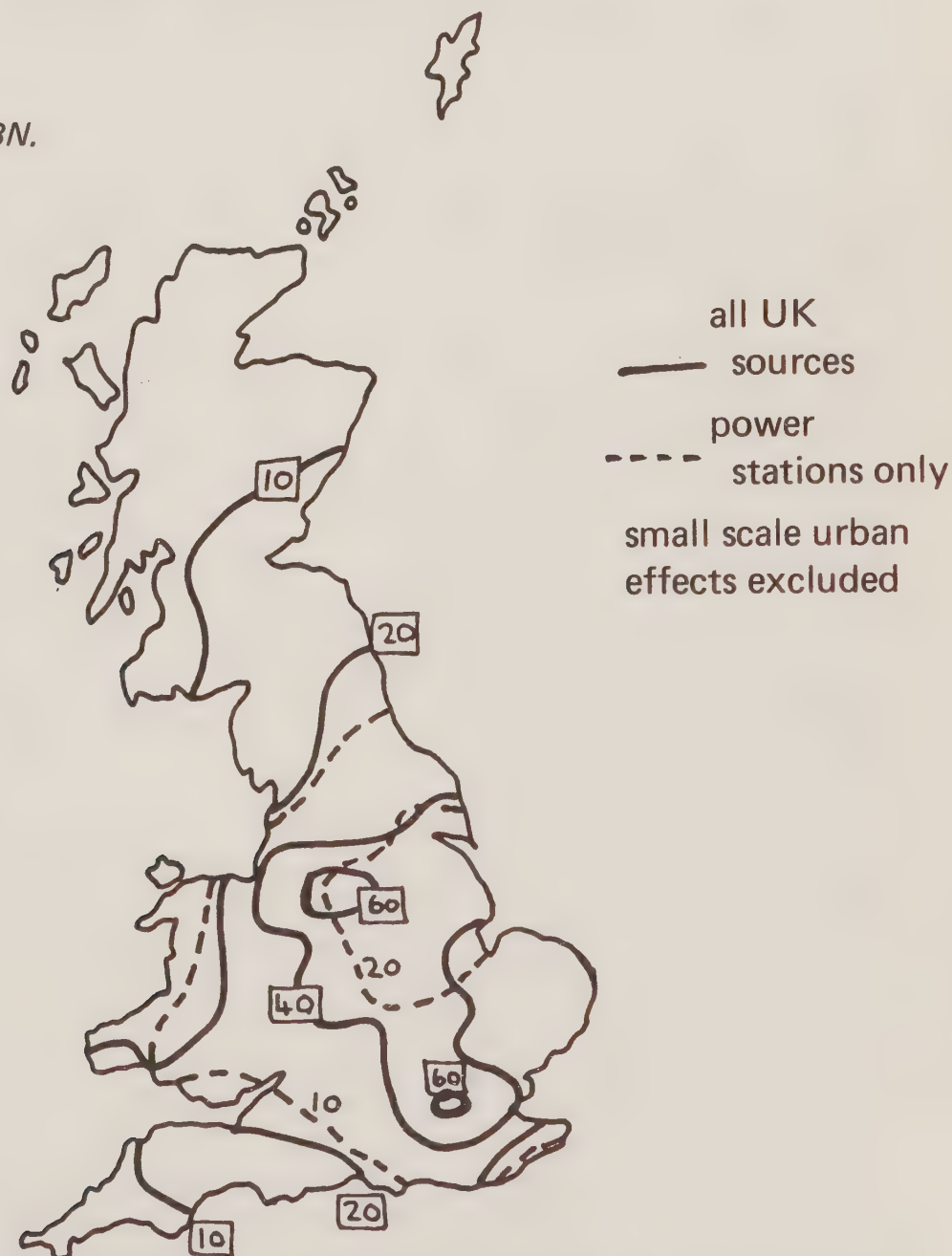
In areas such as Greater London, the collective power station contribution is around 12 - 15 $\mu\text{g}/\text{m}^3$ which accords very well with the estimates made by Cross and Lacey for Hillingdon; that high level emissions account for about 20% of the total concentrations they observed. A similar percentage was quoted in the CENE Report on Coal and the

Environment, a few years back. In the Midlands and Yorkshire areas, where coal-fired power stations are closely grouped, the percentage contribution could be higher.

Whilst urban levels of sulphur dioxide concentrations continue to fall, the percentage contribution from electricity generation will increase. Pushed to the hypothetical extreme, if **all** the nation's fossil fuels were burned in power stations, the latter would clearly be responsible for 100% of the ground level concentrations. The fact remains that, if this were achievable, there would no longer be any urban "hot spots" of high concentrations, and the mean concentrations would be at least an order of magnitude less than the typical urban levels of the 1950s and 1960s. Even in the absence of other changes, transference of fossil fuel burning from individual small sources to power station boilers makes a very significant contribution to cleaner air.

A.J. Clarke

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**Ground Level Concentrations of SO₂ – Annual Averages for the Period
1978 – 80 ($\mu\text{g m}^{-3}$)**

THE CONTROL OF INDUSTRIAL AIR POLLUTION

Dr. Leslie Reed's last report as Chief Inspector* shows an apparently heartening improvement in control of air pollution from registrable works, in that the number of works under complaint fell by about 10% compared with 1982. However, as the report points out, it is too early to predict any long term trend and future prospects are shadowed. Inspectors were forced to make fewer visits during 1983 because of reductions in staffing, so progress cannot be guaranteed. In future years the Inspectorate will have to cope, too, with an increased number of registered works as the formalities are completed for premises which have become registrable under the 1983 revised regulations.

In one respect only will the Inspectorate have less to do in the future; it is not now so directly involved in the actual supervision of the control of airborne radioactive emissions. Inspectors will play an advisory role only, taking part in joint visits to the larger premises with Her Majesty's Radiochemical Inspectors.

The retirement of Dr. Leslie Reed in October 1984, after three successful years in the post of Chief Inspector, raises once again the thorny question of the future of HM Industrial Air Pollution Inspectorate.

As the Inspectorate's responsibilities have shifted slightly, top management within HSE are making renewed efforts to integrate HM IAPI more closely within the new matrix management system. It is proposed to combine all the "specialists" in a single division. Ultimately, the National Society for Clean Air fears that this could lead to all scientific technically qualified staff being drawn into a common HSE consultancy service with no enforcement responsibility. Already, it is apparent that Inspectors in the field will have to progress through the Executive itself, embracing other disciplines in order to climb the managerial ladder. In combination, these measures will fragment the Inspectorate and erode those traditions which over 120 years have resulted in a depth of knowledge and experience which can only be maintained if the majority of the staff devote their careers to air pollution control.

The *Memorandum of Understanding* between HSE and DOE about their functions in relation to industrial air pollution control makes it clear that the HSE must maintain a specific group of inspectors, possessing appropriate qualifications "so as to carry out adequately the Executive's function in relation to the control of industrial air pollution". The Memorandum goes on to state that the Executive will appoint a Chief Industrial Air Pollution Inspector who will be a member of the Management Board of HSE, but now the drive within HSE to trim the number of posts at chief inspector level and to re-grade other personnel accordingly threatens this arrangement.

On the broader management front, HSE's desire to create an effective task force to deal with major hazardous installations — which cause great concern to the public — is laudable, and obviously the Industrial Air Pollution Inspectorate can make an important contribution to the assessment of such sites and the design of measures to ensure that the risk is kept as low as possible. It should also be recognised that there are advantages in

the cross fertilization of ideas and the pooling of expertise that can be achieved within HSE.

However, the *Memorandum of Understanding* also lays down that resources for the control of industrial air pollution should only be used for other work in HSE so long as that does not interfere with the Inspectors' "proper carrying out of their primary function". HSE's Director General has since declared the priorities for both the Commission and for the Executive to be safety first and foremost, and then health (particularly of those at work), with the protection of the environment taking third place. That the last might be assured by stringent attention being paid to measures designed to protect both health and safety is probably true, but undeniably the emphasis is very different from that which DOE and the Inspectorate would place: on protection of the environment first and foremost, thereby safeguarding the health of the community at large.

A recent editorial in the much respected environmental journal *ENDS Report* calls the plans of HSE's Director General for the Inspectorate "at best a monumental irrelevance". Within the Society, many Council members have voiced concern about the reduction in resources available directly to the Inspectorate, at a time when more than ever before it has been required to respond to a surge of international proposals for changes in air pollution control, as well as an increasing level of work at home. One of the worries that the Society has is that the status of the Inspectorate will be so diminished that recruitment to its ranks of suitably qualified Inspectors of the calibre we have come to expect will no longer be possible. Already, there are signs of this fear becoming a reality: the 1983 Report notes several losses but gives no indication that staff have been replaced.

The National Society for Clean Air, together with the CBI and the Institution of Environmental Health Officers, has consistently called for the Inspectorate to be restored to its proper home in DOE: a logical move, since that is where the other protection agencies are located. From that base, properly staffed and funded, the Inspectorate would provide the nucleus that the DOE needs in order to create policies which will turn the UK into a leader rather than a reluctant and footdragging follower in the field of air pollution control. Taking the broader view, an effective, integrated agency for environmental protection is called for if only to develop the principles, such as "best practicable environmental option", espoused by Government but as yet given little concrete reality. Above all, the nation needs an expertly managed team which can act as an advocate for the environment at the highest level, both when major policies are being formulated at home and when the UK is engaged in international negotiations, notably with our Common Market partners.

* *Industrial Air Pollution 1983. Health and Safety Executive. Published HMSO, 1985.*

The President of the National Society for Clean Air has written (29 March 1985) to the Secretary of State for the Environment, drawing attention to the Society's views on the future of the Industrial Air Pollution Inspectorate, urging that the Inspectorate be returned to the Department of the Environment forthwith while its identity remains intact.

SMOKE CONTROL PROGRESS

A review by **Jane Dunmore**

Article 3(2) of EC Directive number 80/779/EEC requires Member States to inform the Commission of zones where the limit values given in Annex I of the Directive might be exceeded after April 1983.

On the basis of analysis of data from the UK network of smoke and SO₂ monitoring sites, the Department of the Environment identified 29 Local Authority areas, part of which would not comply with the limits with regard to smoke. The authorities are as follows:

England Allerdale; Barnsley; Bassetlaw; Blyth Valley; Bolsover; Bradford; Cannock Chase; Castle Morpeth; Chesterfield; Copeland; Crewe and Nantwich; Doncaster; Kirklees; Mansfield; Newark; Newcastle under Lyme; Nottingham; Rotherham; Staffordshire Moorlands; Sunderland; Wakefield; and Wansbeck.

Scotland Cunninghame; Falkirk; Glasgow; Strathkelvin.

Northern Ireland Belfast; Londonderry; Newry.

Having sought derogation for those 29 areas identified by DOE in 1983, DOE, with Warren Spring Laboratory staff as technical advisers, subsequently visited English authorities on the list in order to discuss with them the possibilities of carrying out further smoke control. Where it appeared necessary, the team suggested that the Local Authority should carry out monitoring, in the belief that this would reinforce evidence of the need for action. In all cases, the areas are those where concessionary coal is in use, which exacerbates both the air quality problem and the political problem of making progress in smoke control.

In some areas there has been real improvement since the February 1983 list was compiled. In addition the DOE/WSL team have now visited Local Authorities in the North West and North of England and in the Midlands, and are reasonably satisfied with their success in persuading Local Authorities either to progress their smoke control programme, or to institute a monitoring programme.

It remains Department of the Environment policy that local authorities should complete their smoke control programme, on grounds of equity with other communities and within their own, and on the grounds of Clean Air for the citizen.

Of the 29 areas granted derogations under the EC Directive, the following are progressing existing or new programmes with target dates as indicated. The remainder have reported no progress, or difficulties in getting programmes underway.

Name of authority	Target Date for Completion
<i>England</i>	
Barnsley MBC (S. Yorks)	1993
Bassetlaw DC (Notts)	1990
Blyth Valley DC (Northumberland)	1993
Castle Morpeth (Northumberland)	1986
Chesterfield (Derbyshire)	1985
Doncaster (S. Yorks)	1997
Kirklees (W. Yorks)	1986
Mansfield (Notts)	1993
Newark (Notts)	1993
Newcastle under Lyme (Staffs)	c. 1993
Nottingham (Notts)	1993
Rotherham (S. Yorks)	1989
Staffordshire Moorlands (Staffs)	1993
Wansbeck (Northumberland)	c. 1993
<i>Scotland</i>	
Cunninghame (Irvine)	1986
Falkirk (Central)	
Glasgow (Strathclyde)	1987
<i>Northern Ireland</i>	
Belfast (Antrim and Down)	1989

It is clear that there are still problems in the way of completion of smoke control in some areas where it is needed. Where local authorities have found it difficult to gain public acceptance for a smoke control programme, restraints on spending have made the situation worse. Without special funding by central government (unlikely in the present economic climate and in view of the many local authorities that have managed to find the money for smoke control) it might in the short term be difficult to persuade the local community and its elected representatives to another point of view.

However, in the longer term the Commission of the European Communities will require evidence that the EC Directive limits are being met throughout the Community, so authorities may have to monitor smoke levels in order to prove to DOE, in the first place, that they are not in breach of the limits. At that point, the Secretary of State *could* use his powers to require a local authority to institute smoke control, if breach of the limit values was evident. A crash programme in eight years' time would place a much greater strain on LA resources than a carefully phased programme starting now.

The benefits of smoke control

It might at this juncture be helpful to restate the advantages of the smoke control policy. Over 8 million premises in the UK are now subject to smoke control, and as a result average smoke concentrations in UK urban areas have fallen from 280 micrograms

per cubic metre to about 40 micrograms per cubic metre over the last 20 years. Local authorities cannot control pollution from road vehicles, except by trying to persuade County Councils to approve by-passes and traffic management schemes. Equally, their powers to control pollution from major industrial sources are limited. But domestic smoke still accounts for almost 90% of total smoke emission in the UK. Smoke control is not only the most effective way of reducing emissions of smoke to the atmosphere, it also plays a part in lowering ground level concentrations of other pollutants associated with coal combustion, notably sulphur dioxide. It was for these reasons that the Department of the Environment saw the extension of smoke control programmes as the principal means of meeting the health protection standards for smoke and sulphur dioxide, with which every EEC Member State has to comply by 1993.

Domestic open fires produce an objectionable form of smoke; its tar content is considerably higher than smoke from industrial premises and its likely detrimental effect on health is greater. Domestic chimneys are low, so that the emissions have an immediate and adverse impact on air quality at breathing level. The topography of an area can make matters worse. If a town or city is built on a series of hills and valleys, with the fairly narrow terraced streets typical of older towns and village centres, winter weather conditions can cause a build-up of smoke in the valleys.

Individual reactions to polluted air vary greatly, depending on the age and general health of an individual, and particularly on the condition of the lungs. The amount of smoke and other pollutants in the air, and the length of time that a person is breathing it in, are also important. Episodes of high pollution levels are often associated with cold weather. The Royal College of Physicians found that patients with a history of sensitivity to cold weather suffered breathing impairment when exposed to cold air, free from any added pollutant. The addition of smoke and other pollutants can aggravate the condition of patients suffering from asthma or bronchitis and lead to increased airway resistance.

A table in a Manchester report* correlated the yearly averages of smoke and sulphur dioxide, 1962 to 1975, with the death rate for bronchitis in the Salford area. There is strong evidence that the bronchitis death rate has roughly followed pollution levels from smoke and sulphur dioxide and that as these levels have declined so has the number of deaths due to bronchitis.

Even when no apparent physical symptoms are produced, the grime and dirt from a smoky atmosphere can have a very depressing effect. Dust and soot fallout on paintwork, laundry and household surfaces increases the burden of housework and adds to the cost of keeping houses and public buildings clean and in good repair. Air pollution also interferes with the enjoyment in the surroundings and therefore affects people's happiness.

Air pollutants are associated with corrosion of metals and stonework, damage to painted surfaces and fabrics, damage to sensitive plants and crops and reduction in visibility and hours of sunshine: in short, general environmental degradation.

Better air quality brought about by smoke control has improved health, surroundings — and the weather. Incidences of fog have been markedly reduced and there have been significant improvements in both visibility and hours of sunlight in the UK. The improvement in atmospheric conditions has also been noticeable in relation to the cleaning of buildings, formerly blackened by soot deposit in addition to damage caused by the action of sulphates.

Some authorities have tried to carry out smoke control informally under housing improvement procedures, particularly in the public housing sector, but this process is vulnerable, since without a formal order subsequent householders (who may be owner-occupiers) can reconvert appliances to the open coal burning fire. The only real solution is the institution, or restarting, of a rolling smoke control programme which can be targetted in the first place to cover areas where domestic coal use on open grates is widespread; householders do not have to give up their open fires or fuel allowances, and fears of an increase in heating costs are often misplaced. In most cases, the greater calorific value of the smokeless fuels or the higher efficiency of the appliance compensates for the higher basic fuel cost.

As a regular speaker on smoke control issues pointed out at the Society's Conference last October, some people in this country cannot afford to be concerned about forest damage and acid rain — they still face the basic problems of emissions from domestic chimneys, and of being forced to breathe poor quality air.

** Manchester Area Council for Clean Air and Noise Control. 20 years of air pollution control. 1977.*

SMOKE CONTROL

CLEAN AIR ACT 1956

EXCHEQUER CONTRIBUTION TO SMOKE CONTROL ORDERS 1985/86

The Department of the Environment has written to all local authorities who submitted programmes for 1985/86 notifying them of their allocations. All programmes submitted have been approved in full and the schedule of figures for individual authorities is as follows:

REGION AND LOCAL AUTHORITY	£	REGION AND LOCAL AUTHORITY	£
Northern		North West	
Blyth Valley	60,000	Crewe and Nantwich	30,600
Darlington	45,449	Blackburn	11,429
Gateshead	68,740	Bolton	165,283
Langbaugh	51,000	Liverpool	140,000
South Tyneside	25,280	Oldham	29,071
Stockton-on-Tees	143,000	Preston	19,682
Wansbeck	359,101	Rochdale	85,706

REGION AND LOCAL AUTHORITY	£	REGION AND LOCAL AUTHORITY	£
		East Midlands	
Rossendale	25,000	Ashfield	49,582
St Helens	30,000	Bolsover	36,696
South Ribble	21,634	Bassetlaw	16,228
Copeland	30,600	Blaby	8,000
		Broxtowe	10,080
Yorkshire and Humberside		Erewash	15,686
Barnsley	157,699	Mansfield	53,487
Doncaster	399,784	Newark	4,165
Harrogate	76,550	Nottingham	105,960
Kirklees	63,257	South Kesteven	4,800
Rotherham	160,285		
Selby	92,388	Eastern	
Hull	27,860	Peterborough	5,628
		South West	
West Midlands		Bath	19,782
Birmingham	57,060	Bristol	20,584
Dudley	30,769	Northavon	28,160
Lichfield	26,323	Cheltenham	6,857
Newcastle-under-Lyme	17,000		
Nuneaton	10,135	South East	
Staffs Moorlands	75,000	Broxbourne	8,542
Walsall	169,370	North Bedfordshire	20,715
Worcester	35,000	Slough	7,760
Wolverhampton	63,810	Oxford	11,161

There has been a further change to the criteria in paragraph 10 of circular 11/81. The figures given in Annex C to the Circular have been reconsidered in the light of the proposed programmes and from 1 April 1985 the following figures should be used in place of those given in Annex C:—

Yorkshire and Humberside	£400
Northern	£375
West Midlands	£325
East Midlands	£325
North West	£300
Elsewhere	£200

UPDATE

AERIAL CROP SPRAYING

Following consideration of the report on aerial crop spraying prepared for the Society's Parliamentary and Local Government Committee (see *Clean Air*, Volume 14 No. 3/4, page 99) the Society resolved that the public is afforded inadequate protection from vapour drift caused by aerial spraying. While noting and welcoming the tightening of CAA controls announced by the Minister of State for Transport in December 1984, the Society concluded that the forthcoming Food and Environment Protection Act offered the best hope for effective controls to be introduced which would give the public full protection.

Having monitored the progress of the Bill through the House of Lords, the Society wrote to Lord Belstead asking for clarification of the powers which Agriculture Ministers would be granted under the Bill to control aerial spraying. The Society also called for the publication of the regulations which are to give effect to the Bill's various broad provisions.

The reply, from Peggy Fenner MP, the Parliamentary Secretary stated that existing restrictions on which pesticides may be applied from the air will be maintained via powers in the Bill but these could, subject to consultation, be used to apply more general environmental controls on aerial applications. However, she went on to say that the Government has no immediate intention of imposing widespread local prohibitions on aerial spraying.

The Society had also asked what measures were being taken to ensure that data about the safety of pesticides cleared for aerial applications have been properly validated in the UK. Mrs. Fenner's reply made it clear that safety data submitted in support of a pesticide has to be prepared and validated in accordance with protocol and standards set by Government. Scrutiny of the data is the responsibility of the Advisory Committee on Pesticides.

As the Government clearly does not intend to move swiftly to secure much more stringent control of aerial spraying, the Society decided that it would be necessary to put its views direct to MPs before the Bill reached the Committee stage in the House of Commons. Accordingly, the Information Officer attended a House of Commons meeting held to brief MPs on matters relating to the Food and Environment Protection Bill. She told MPs of the Society's concern about aerial spraying, giving salient facts and briefing Members on the controls (including notification to local authorities) which the Society considered necessary. Several Members expressed interest and requested any further information the Society could give for their use during the Second Reading debate. A brief was then prepared and sent to about 50 MPs who were known to be interested in this issue or in environmental matters generally.

In the brief, the Society noted that local authorities have the responsibility for general environmental health protection in their areas and bear the brunt of

community concern when incidents involving spray drift occur. The Society said: "The very least that any new procedure covering aerial spraying should ensure is that the local authority is notified when aerial spraying is to take place in its area and with sufficient warning for the authority to take any action it deems necessary to protect local residents or people in sensitive areas such as schools and hospitals, and to safeguard property including gardens, market gardens, beehives etc. Bearing in mind that aerial spraying is rarely carried out without accidental contamination of the surrounding area, local authorities should be able to apply for specific areas to be exempted from aerial spraying or the impact thereof."

The Society went on to say that since there are some situations in which aerial spraying is required, e.g. for forestry and bracken on hillsides, provisions should be made for such applications to be licensed. Calling on Parliament to resolve these important issues, the brief concluded:

"The National Society for Clean Air contends that the proper control of aerial spraying is a matter of such wide general interest and concern that it should not be left to the discretion of Ministers to resolve, possibly some years hence, by means of what might prove to be quite inadequate regulations".

During the second reading debate on 5 March 1985, the Society's views were referred to by several MPs. Mr. Peter Hardy, MP for Wentworth, called for the environmental point of view to be represented within the Advisory Committee on Pesticides. He said: "The manufacturing industry must not have the dominant voice. The view of the Public

Health and Industrial Pesticides Council seemed very valuable. The National Society for Clean Air also has a legitimate view to express. Such organisations should be assured that their opinions and qualifications will be recognised."

The Society's brief for MPs also referred to reports prepared by other organisations on incidents associated with pesticides application and aerial spraying in particular. The first, which appeared in February 1985, was produced by Friends of the Earth and is entitled "Pesticides — The First Incidents Report". The second, produced by the Soil Association, is entitled "Safety Never Assured — The Case Against Aerial Spaying". The Society would be grateful to know of any further incidents, particularly those associated with aerial spraying. Reports will be treated in confidence if necessary. Contact Jane Dunmore, Information Officer.

CONTROLLING POLLUTION: PRINCIPLES AND PROSPECTS

The Government's response to the Tenth Report of the Royal Commission on Environmental Pollution. Pollution Paper No. 22.

GENERAL

While the most regrettable aspect of this document is its general tone of complacency, the Government does, in this and other utterances, now give the impression that it is aware of the public's interest in the issues dealt with in RCEP's report, and recognises that public concern, as well as science, has to be taken into account in formulating policy. It is in view of that laudable progress in thinking that certain phrases in the document

appear particularly maladroit or misleading, for example the statement in the introduction that "Motor vehicle emissions have been curbed". On a vehicle by vehicle basis, this may be true, but it should not be taken to mean that the problems have been resolved!

SPECIFIC ISSUES

Straw burning

Here, the reflection on the 1984 harvest, that "observance of the bye-laws and the code of practice issued by the NFU has markedly reduced problems," is specifically refuted by the NSCA's Survey (see page 3) which reveals substantial and widespread dissatisfaction with the new model bye-laws among the LAs which adopted them. When MAFF have had time to digest our findings, Ministers might consider that the Government welcome for the NFU proposal to set up a computerised register of techniques for and problems associated with ploughing in straw should be tempered by a recommendation that a register of problems associated with straw burning should also be computerised. Of course, we hope that true enlightenment will dawn, and plans for the introduction of a ban will promptly be drawn up!

(Long-term) Monitoring

The document is helpful in spelling out exactly what monitoring the Government is sponsoring, and in admitting to the inadequacies of the present system. But the whole programme as outlined is geared far more to meeting the UK's international commitments than to monitoring designed to meet more local problems and needs within the UK itself. It would be possible to improve the spread of monitoring within the UK, at

relatively low cost. For example, the NSCA drew the attention of the House of Lords European Community Committee, Sub Committee G (Environment) to the advantage of using diffusion tubes to obtain a general picture of background NO_x levels. London Boroughs are now conducting a year long, blanket survey using approximately 150 diffusion tubes, at a weekly cost of £1 each per week plus 25p per tube per analysis (conducted by AERE, Harwell). The manpower effort involved is just 3 man hours per week per borough. The Government in its response does little to encourage local authorities in such efforts, or to point the way forward for the development of monitoring by LAs to meet changing needs (except to acknowledge the benefits of co-operative effort as exemplified by the Cleveland Boroughs).

Diesel smoke emissions

The Department of Transport assessment of possible technical improvements in the design of diesel engines so as to reduce smoke emissions and maintain low levels in service is welcome. However, DOT have made no commitment to proceed with implementing any techniques recommended. If this is to be more than just a paper exercise, Government recognition that diesel smoke is an environmental nuisance must be translated into action, to include efforts to persuade the EEC to change the smoke acceptance standard for new vehicles. The Government's conclusion that there can be no role for LAs in policing smoke emissions from road vehicles is disappointing, and indicates that Government has understood neither the scale of the problem, nor the frustration amongst local communities at the lack of use of existing powers to deal with diesel smoke.

Acid Rain

Both in relation to diesel emissions and more generally it is difficult to escape the conclusion that the Government finds it cheaper to fund research than to pursue control measures. This notion is reinforced by the response to RCEP's recommendation that the Central Electricity Generating Board should introduce on a pilot basis, over the next five years, certain of the sulphur dioxide abatement options that are already available. The Government has merely restated its reply to a much wider ranging recommendation by the House of Commons Environment Committee, that "... the Government is not prepared to commit the country to expensive methods of abating sulphur dioxide emissions when the benefits are so uncertain." In mitigation, the Government reiterates its intention to reduce emissions of both sulphur dioxide and nitrogen oxides "aiming at a 30% reduction from 1980 levels by the end of the 1990s".

If the change in Britain's industrial base continues on the same trend, we can confidently expect the Government's aim of policy to be achieved with very little real effort in the form of SO_x controls, although some innovations will be required to reduce NO_x levels by 30%. Indeed, the only specific commitment to control technology which the Government is prepared to make comes under this heading, and it is to be hoped that the lean-burn engine can live up to official expectations. Together with low NO_x burners in power stations, it is obviously destined, as is pressurised fluidised bed combustion for SO_x control, to be the great white hope for the future, the UK's catch all riposte to any suggestions that we are not doing our bit for acid rain control.

Positive efforts are to be made to research the problems, however. The DoE announced subsequent to the publication of PP 22 that total support for air pollution research would run to £3.4 million a year (compare this amount with the figure of £2 million a year earmarked for R and D into alternative uses for straw, and it appears somewhat less than munificent!) When it is realised that only about half the total is to be spent on investigation of the acid deposition problem, it is clear that the Government still intends to rely heavily on work conducted by and for the CEEB, and other public bodies. In that context, the CEEB recently announced a joint programme, in conjunction with the Duke of Grafton's committee on the preservation of ancient cathedrals, to monitor the effects of its emissions on cathedrals.

Of all the important recommendations made in RCEP's 10th Report, the Government has accepted with least reservation those touching on questions of confidentiality. The response adopts the RCEP recommendations that there should be a presumption in favour of openness in environmental matters, and a new working party is to be set up to report within 12 months on how this can be done in practice. This is proof (if more is needed) of the impact that a strong and effective campaign has on both public opinion and government reaction to an issue. The need for greater openness has been a theme running through a series of RCEP reports, and indeed is a message the Society has consistently put over, but it took a concerted effort spearheaded by the Campaign for Freedom of Information to wring specific concessions from Government.

AGREEMENT REACHED ON EUROPEAN EXHAUST EMISSION CONTROLS

Considerable progress was made at the Council of Environment Ministers meeting on 6 December 1984. As reported in the last issue of *Clean Air* (Update, page 96) the Council reached agreement on the introduction of unleaded petrol no later than 1989 or earlier if individual Member States wish. The minimum octane levels of premium grade unleaded petrol will be 95 RON, 85 MON, at the pump. The Council *did not* reach agreement on the Commission's proposal for the date by which new cars must run on lead-free petrol. This will be included in another directive. UK junior Environment Minister William Waldegrave has expressed some concern that there should be no slippage in the proposed programme and it is to be hoped that the UK government will press the point about the need to set dates soon so that manufacturers can plan the introduction of cars that can run on lead-free petrol.

At the December meeting, and at their subsequent meeting on 7 March, Ministers failed to agree on proposals to limit gaseous emissions from cars. The UK stuck to its guns in favouring the development of the lean-burn engine possibly in combination with the oxidation catalyst which will ensure reductions in hydrocarbons. The latter measure might be important, as evidence suggests that ozone, the production of which is fuelled by hydrocarbons, may be the agent, or one of them, responsible for observed damage to trees. Environment Minister William Waldegrave has stated that the UK's objective is to find a course that is tough enough to meet legitimate

German requirements without the danger of fragmenting the market, which would greatly damage the UK motor car industry.

The case in favour of the so called lean-burn engine is that it achieves intrinsically low emissions of oxides of nitrogen, the engine lasts longer, works better at high speeds, and leads to 10% savings in fuel over current models. Ford Motor Company is the leader in developing lean-burn engines and, although it has not so far produced a working model for public comment, Mr. Waldegrave has stated in Parliament that a car equipped with a lean-burn engine could be in the showroom later this year. However, cars equipped with the lean-burn engine cannot meet US emission standards, even when equipped with an oxidation catalyst to control carbon monoxide and hydrocarbons emissions. Currently, only 3 way catalysts can achieve the US standards, which are similar to those proposed by the European Commission, as stage 2 of the reductions in exhaust emissions.

EEC Environment Ministers met again on 20 March and after an all night sitting finally agreed in principle to tighten exhaust emission standards for NO_x, HCs and CO and set a timetable for three different categories of new cars to meet the new limits.

The agreement means that three-way catalytic converters will have to be introduced on new model cars of 2 litres and above from 1988. New models in the medium size range (1400 cc – 2200 cc), which accounts for 60% of the European market, have until 1991 to meet the new standards. The extended date for this range of cars will allow lean burn engines to be developed and sold until at least

1993, when all new cars in the range will have to comply.

Cars of under 1400 cc have until October 1990 to meet standards 50% less severe than those for the bigger cars. Ministers will review the situation in 1987 to decide whether tougher standards for this smallest range of cars should be implemented by 1993.

A decision on precisely what the emission standards will be is expected to be taken at the June meeting of the Environment Ministers. The Commission of the European Communities have proposed that standards should be equivalent to current US requirements, but framed so as to take account of the different driving patterns and speeds prevailing in Europe.

House of Lords say "No" to EEC proposals

A House of Lords Select Committee has come out against the EEC proposals for cleaning up car exhaust emissions. The Committee say that environmental damage caused by pollution from vehicles is serious enough to warrant urgent and tougher action. They recommend that the EEC should require standards similar to those currently applied in the USA and Japan (for control of CO, NO_x and hydrocarbons) as from 1991 — that is, 4 years earlier than proposed by the EEC. On the basis of present predictions, the Committee say that the lean-burn engine is unlikely to be sufficiently advanced to meet such requirements, even by 1995, and would in any event do little to control hydrocarbons emissions. For these reasons, the Committee recommend that catalytic convertors should be used to achieve the Common Market's Stage 2 standards, from the earlier date of 1991.

The Committee say that while they are aware of the conflicting arguments about catalysts, the catalytic convertor is a tried and tested technology and they are satisfied of its efficiency and durability. However, the Committee urges the continuation of research into designs which might achieve greater economy and efficiency while at the same time conforming to the required emission standards.

The report, entitled *Lead in Petrol and Vehicle Emissions*, by the House of Lords Select Committee on the European Community (Session 1984/85, 5th Report), is published by HMSO price £9.15.

PROGRESS ON EEC DRAFT DIRECTIVES

The Council of Ministers has agreed the Directive on air quality standards for nitrogen dioxide, with some minor amendments which, in the view of the Department of the Environment, represent a significant improvement for the United Kingdom.

The Directive provides for a limit value of 200 micrograms per cubic metre and requires that this value should not be exceeded in more than 2% of hourly measurements over any reference year — 1 January to 31 December. There are provisions for temporary derogations. In the opinion of the Department of the Environment, the limit value of 200 ug/m³ is still unnecessarily low; the Department has argued that a higher limit would still afford comfortable protection for human health. However, they were prepared to concede that point, having secured "more sensible arrangements" for monitoring.

It has been agreed now that the directive no longer requires kerbside monitoring. Since levels of NO₂ are known to exceed 200 µg/m³ at kerbside in some urban areas, it would have been very difficult to meet the directive's limit had monitoring been required at that location. With this change, the DOE is satisfied that the UK will be able to comply with the limit without difficulty.

The DOE proposes to extend monitoring of NO₂ levels, which has been carried out so far at 3 sites over a period of 10 years in addition to the work done by AERE Harwell to survey longer-term NO₂ levels across the greater London area. A number of permanent monitoring stations are to be installed and DOE are considering the use of a mobile monitoring vehicle to augment the small number of fixed sites and keep costs (about £15,000 per station for fixed sites) to a minimum.

DOE have also announced a major expansion of monitoring in rural areas, aimed at securing a better understanding of the processes leading to acid deposition and photooxidant generation. This development follows the recommendations of the UK Review Group on Acid Rain, which drew attention in their 1984 report to the lack of coverage of acid deposition monitoring sites over the UK and advised the establishment of nine primary sites and 50 secondary sites to map the spatial distribution of acid deposition.

Other DOE monitoring plans include the expansion of monitoring networks to include ozone, nitrogen oxides and sulphur dioxide. DOE expect to have about 20 NO₂ and ozone monitoring sites operational in a co-ordinated network within three years. These will bring

together existing sites operated by other authorities, and new sites will be established where necessary. Other work will concentrate on developing techniques for measuring levels of hydrocarbons in the atmosphere so that, eventually, routine monitoring of different hydrocarbons can be carried out.

As readers will know, it can take many years for European Community proposed directives to reach fruition in an agreed and adopted text. The Society first commented in 1980 on a preliminary draft directive concerning the assessment of the effect on the environment of public and private development projects. At that time, the Society told the DOE that it strongly supported the broad concept of environmental impact assessment but that it had reservations about the detailed procedure as laid down in the paper, which it considered somewhat cumbersome and liable to increase delays in planning procedure. The UK and other governments seemed to have agreed with that view and the draft directive has been under negotiation and a process of revision ever since. Now, a directive on environmental impact assessment has finally been given the go ahead by the Council of Ministers, following the withdrawal by Denmark of the last remaining objection to the latest draft.

PROTECTION OF THE OZONE LAYER

Agreement has been reached on a global framework for a range of possible measures to protect the ozone layer.

After 2½ years of negotiation, the Dip-

lomatic Conference in Vienna completed work on the text of the United Nations Convention on 22 March. The UK is expected to sign the Convention shortly. The European Community and all other individual Member States are expected to become parties, along with at least 20 other countries. The Convention — which will be formally known as the Vienna Convention for the Protection of the Ozone Layer — is the first global convention to be concluded under the auspices of the United Nations Environment Programme. It establishes a framework for a range of possible measures to protect the ozone layer along lines that are fully compatible with the Community's environmental policy of concentrating on the prevention rather than the cure of damage.

Agreement was also reached in Vienna to continue on an associated Protocol to control the use of chlorofluorocarbons, the family of chemicals principally implicated in potential depletion of the ozone layer.

Depletion of ozone in the upper atmosphere would lead to an increase in the amount of UV-B (ultraviolet B) radiation reaching the surface of the earth, with consequent increases in certain, non-melanoma, types of skin cancer and slowing down of growth of life forms, particularly in the oceans. Man-made depletion and redistribution of ozone are principally brought about by chlorofluorocarbons (CFCs) and could, in time, cause climatic effects.

The European Community has already taken steps, dating back to 1980, to control the production, use and emissions of CFCs. The Conference did not complete work on control measures for CFCs

but agreed a 2-year programme to maintain momentum towards a possible CFC protocol to the Convention.

LEAD-FREE PAINT BY 1987 — VOLUNTARY MOVE BY PAINTMAKERS' ASSOCIATION

Following discussions with the Government, agreement has been reached with the Paintmakers' Association of Great Britain that from January next year lead will have ceased to be added by member companies to white gloss, primer and undercoat paints — which account for 60 per cent of solvent-based paint sales — and lead will cease to be added to all coloured gloss paints and varnishes from July 1987, an advance of one year on the Paintmakers' Association's earlier timetable.

Gloss paint with no deliberately added lead would contain only trace elements of lead and would comply with the United States limit of 0.06 per cent by weight in the dry film. (About 1/3 of solvent-based paints and varnishes already contain no added lead; emulsion paints, which constitute about 75 per cent of total decorative sales in the UK are water-based and have never contained lead additives).

The Paintmakers' Association have also agreed to introduce as soon as practicable an appropriate label to identify paints with no added lead.

Announcing the voluntary agreement, Environment Minister William Waldegrave said, "I am grateful to the Paintmakers' Association for this initiative. Its members account for 90 per cent of UK paint manufacture by volume. The agree-

ment should encourage companies who are not Association members, and any importers, to follow the same route and the Government is exploring the possibility of a UK initiative to seek to amend current EC legislation in this field."

NOISE COMMITTEE TACKLES FLAT CONVERSIONS AND MOTORBIKES

The NSCA's Noise Committee has consolidated its first six months of work by producing an initial report on noise from flats formed by conversion, and giving written and oral evidence to the House of Lords on motorcycle noise.

Noise in Flat Conversions

Many people who live in flats which have been converted from larger buildings suffer from poor sound insulation. Even when neighbours conduct themselves in a totally reasonable way at reasonable times, poor insulation of party walls and floors means that the everyday noises still have considerable nuisance value.

A Building Research Establishment (BRE) survey into noise from neighbours in multi-storey flats showed that sound insulation in flats remains an important source of dissatisfaction. Not only was it often mentioned spontaneously, but it was ranked first as a defect, above other commonly encountered problems such as condensation on walls. The Manchester Area Council for Clean Air and Noise Control (MACCANC) examined the quality of the sound insulation in flat conversions in the Manchester area and found that 75% had inadequate sound-proofing.

When the revision of the Building

Regulations was first proposed, the National Society for Clean Air pressed for sound insulation requirements to be introduced for flat conversions. So far this has not been done and the alternative, the use of the planning permission process, has resulted in some uneven decisions being made on appeal by the Department of the Environment.

Having considered a report prepared by Committee members, the NSCA Noise Committee has decided that its primary objective must be to secure a reasonable sound insulation requirement for flat conversions within the Building Regulations. In order to put forward a convincing case, the NSCA will gather as much evidence as possible on the scale of the problem. A questionnaire is to be issued to all local authorities. The aim is not simply to elicit figures about complaints, but to draw from local authorities a more accurate picture, based on the knowledge they have of conversions in their area. Often a problem only begins when a quiet individual is replaced by an ordinary family, who inevitably create noise when sound insulation is poor — so that a potential problem exists before complaints can reflect it. The questionnaire will also investigate the use of planning measures taken by local authorities in relation to flat conversions, to find out whether the applications are refused on grounds of poor sound insulation, or granted with appropriate conditions. Finally the Society wants to establish the outcome of any subsequent appeal decision made by the Department of the Environment. The Society will use all the data acquired from the questionnaire returns to evaluate the situation nationwide and will then present the results, with appropriate submissions, to Government.

Motorcycle Noise

In March 1985 the House of Lords Committee on the European Communities, Sub-Committee G (Environment) asked the Society to present written and oral evidence on motorcycle noise. The Lords' enquiry was prompted by the publication of a *Proposal for a Council Directive amending Directive 78/1015/EEC on the approximation of the laws of the Member States relating to the permissible sound level and exhaust system of motorcycles*. The Society had some two weeks in which to prepare its written evidence, and fortunately the Noise Committee met just in time to discuss the subject.

Having examined the *Proposal*, the Society concluded that it constituted a welcome further step towards the improvement of the environment by encouraging the development of ever less noisy motorcycles. Nevertheless, it considered that the problem of motorcycle noise is being tackled with too little emphasis on discouraging the deliberate increase in the problem which results from motorcycle owners tampering with the silencer or driving in an inconsiderate manner.

In fact, while the Commission's proposals will tighten up the type approval standards further, in the short to medium term there is little prospect of a real improvement in noise output from the smaller motorbike, which forms about 50% of the new motorbike market in the UK. The Department of Transport have estimated that the first stage of the proposals, effective from 1 October 1987, will secure at the most a 1 dB(A) decrease in noise from the smaller bikes; it will be 10 years before new bikes in that

category are quietened by 3 dB(A). The Society declared its support for the earlier introduction of stricter standards for the whole range of motorbikes, if these are technically achievable at a bearable cost.

However, in both its written and oral evidence, the Society was concerned to drive home the point that the problem of motorcycle noise should be tackled with vigorous emphasis on the **maintenance in use** of the technical standards achieved at some expense by motorcycle manufacturers. The NSCA stated that police powers to deal with faulty or illegal silencers on motorcycles must be strengthened. Specifically it has suggested a simple static test which would encourage police to apply to motorbike noise the three elements of "stop — examine — test", such as are used to tackle the problem of drunken driving.

The full text of the Society's evidence will be published later in the year in the Report to be issued by the House of Lords Sub-Committee G.

ASBESTOS VITRIFICATION WINS

Four companies were presented with the 1984 Pollution Abatement Technology Awards by Tom King, Secretary of State for Employment, on 18 March 1985 at the Royal Society of Arts.

Of particular interest were the awards to Vitrifix Limited, for a system which feeds waste asbestos into an electric furnace at a temperature of more than 1100°C, turning the material into totally non-toxic glass. The Vitrifix process can be carried out on-site, eg when asbestos is stripped out of a decommissioned power station.

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30 APRIL — 1 MAY — CONFERENCE "Pollution in Cumbria"

Organisers: Institute of Terrestrial Ecology. To be held at Grange Hotel, Grange-over-Sands, Cumbria.

Fees: £15 (registration); accommodation and meals charged separately.

Details/bookings: Dr. P. Ineson, Institute of Terrestrial Ecology, Merlewood Research Station, Grange-over-Sands, Cumbria LA11 6JU.

13 — 24 MAY — 2 WEEK COURSE "Measurement, Analysis and Control of Noise"

Organisers: Department of Mechanical Engineering, University of Sheffield and Bruel & Kjaer, Denmark. To be held in the Mechanical Engineering Department, Mappin Street, Sheffield.

Course Fee: £395 (cheques payable to "University of Sheffield")

Details/bookings: The Short Course Office, University of Sheffield, Department of Mechanical Engineering, Mappin Street, Sheffield S1 3JD (Tel. 0742 78555).

21 — 23 MAY — CONFERENCE "International Conference on Acid Rain Prevention"

Organisers: The University of Rhode Island. To be held at The University of Rhode Island, USA.

Details/bookings: Dr. T. Kowalski, Department of Ocean Engineering, The University of Rhode Island, Kingston, R.I. 02881 USA. (Tel. (401) 792 — 2550/2273)

21 — 23 MAY — CONFERENCE "The Oil Industry and the Environment"

Organisers: The Institute of Petroleum, in association with the Fellowship of Engineering. To be held at the City Conference Centre, 76 Mark Lane, London EC3.

Conference Fee: £170 + VAT (Members); £190 + VAT (others)

Details/bookings: Miss Caroline Little, Conference Officer, Institute of Petroleum, 61 New Cavendish Street, London W1M 8AR.

23 MAY – SYMPOSIUM “Landfill Monitoring”

Organisers: Harwell Laboratory. To be held at Harwell.

Fee: £40.00 + VAT.

Details/bookings: Mr. L. Evans, Education and Training Centre, Harwell Laboratory, Oxon OX11 0QJ (Tel. 0235 24141 ext. 3106).

4 – 6 JUNE – CONFERENCE and EXHIBITION “CHP – Developments and Decisions”

Organisers: Combined Heat and Power Association. To be held at the Palace Hotel, Torquay, Devon.

Fees: The Conference is residential. For inclusive rates, enquire of the CHP Association. Non residential fees are £150 (Members) and £160 (Non-members).

Details/bookings: Combined Heat and Power Association, Bedford House, Stafford Road, Caterham, Surrey CR3 6JA.

16 – 21 JUNE – CONFERENCE AND EXHIBITION “78th APCA Annual Meeting and Exhibition”

Organisers: The Air Pollution Control Association, USA.

Fees: \$185 (Members): \$245 (Non-members)

Details/bookings: Air Pollution Control Association, P.O. Box 2861, Pittsburgh, PA 15230, USA.

14 – 27 JULY – SEMINAR ‘Sixth International Seminar on Environmental Impact Assessment’

Organisers: The Centre for Environmental Management and Planning Ltd., Dept. of Geography, University of Aberdeen. To be held at University of Aberdeen, Scotland.

Fees: Seminar registration £510 + VAT

Accommodation £320 + VAT

Details/bookings: Sandra M. Ralston, Seminar Organiser, CEMP, Department of Geography, University of Aberdeen, Old Aberdeen AB9 2UF, Scotland, UK. (Tel: Aberdeen (0224) 40241 ext. 5188/6515.)

22 – 23 JULY – COURSE “European Community Environment Policy and British Local Government”.

Organisers: School for Advanced Urban Studies, Bristol University. To be held at the School.

Fee: £110 (inclusive accommodation and meals)

Details/bookings: Katherine Green, Course Secretary, School for Advanced Urban Studies, University of Bristol, Rodney Lodge, Grange Road, Bristol BS8 4EA.

2 – 4 OCTOBER – CONFERENCE “Odorants: Sources, dispersion, effects, olfactometry, technical and administrative measures”.

Organisers: VDI-Kommission Reinhaltung der Luft (the Commission on Air Pollution Prevention in the Association of German Engineers).

Details: VDI-Kommission Reinhaltung der Luft, Postfach 1139, D 4000 Dusseldorf, Federal Republic of Germany. Tel. (02 11) 62 14 -404 or -255.

INDUSTRIAL NEWS

New Name Reflects Market Leader's Position

Dust Control Equipment Limited of Leicester, Britain's market leader in the manufacture and application of industrial process dust control equipment, has changed its company name to DCE Group Limited to increase recognition of its worldwide reputation. The Group decided to adopt a name which is more readily identifiable in any language area.

More than 200,000 DCE dust collector units are operating around the world extracting nuisance dust or collecting product dust in many industries and applications ranging from grain silos to coal-fired boilers and from chemical works to grinding machines.

DCE exports over 60 per cent of its production and has a network of overseas companies and distributors. In the USA there is a full manufacturing operation; Japan, Australia and South Africa all have assembly facilities for components manufactured in Leicester, while German, French, Dutch and Scandinavian subsidiaries are supplied direct from Leicester. Reader Enquiry Service No. 854

New Catalytic Air Purifier from Signal

Signal Instrument Company Limited, specialists in gas analysis and blending technology, have introduced the AS 80 catalytic air purifier for use with flame ionisation detectors. The unit removes all hydrocarbons, including methane,

down to 0.1% of original level, and provides an inexpensive source of clean, zero grade air.

The clean air supply provided by the AS 80 eliminates the need for costly, zero grade air cylinders, and the unit gives an improved signal to noise ratio, with a quieter and more stable baseline. Up to ten flame ionisation detectors can be run from one AS 80, and the instrument is suitable for continuous use.

Reader Enquiry Service No. 855

Simultaneous Determination of Sulphur Concentration and Dust

Responding to the demands for superior sulphur monitoring methods, Erwin Sick has further developed its proven dust density monitor to introduce the GM21 gas concentration and measuring equipment. The device, which acts as a spectrophotometer, provides full compliance with environmental laws and will find applications in power stations, cement industries, refuse incinerators, refineries, sugar factories etc.

GM21 comprises optical head with remote reflector which are mounted on opposite sides of the stack. Dust and noxious gases are continuously and directly monitored as they pass through the unit's projected, modulated light beam. In order to achieve a reliable result, a UV light source is employed together with rotating disc containing three spectral filters. The filters are respectively selected to measure the light absorption by SO₂, NO₂ and particulate.

Nitrous oxide and dust are incorporated into the measurement, as digital evaluation by microprocessor requires their total value to be subtracted from the emission to provide an accurate SO₂ reading on the remote indicator. By measuring in the visible UV band CO/CO₂ and other gases have no influence on the measurements.

A photosensitive cell converts the light received to an electrical voltage which is compared with the reference signal predetermined by the range selected — 0.45, 0.9 or 0.18 extinction. If required, output of the GM21 may be applied to any 20mA chart recorder or cassette recorder.

In common with other models in the range the system is total impervious to: voltage and temperature changes within the range — 20°C to +60°C, ageing of components, or stack wall movement. Weighing only 22 kg, the GM21 is simple to install and is normally sited in the open air for which a weatherproof housing may be supplied. Both monitor units may be pivoted for easy cleaning and are equipped with air purging blowers to provide effective protection against soiling of the optical surfaces.

Reader Enquiry Service No. 856

Beale Environment Monitoring Station

Beale Electronic Systems, manufacturers of hardware and software systems, monitors and fibre optic networks, have now launched an Environment Monitoring Station which incorporates distributed microprocessor intelligence, with one or more Remote Data Acquisition Units communicating with a Master Station. Overall, the monitoring station has the following capabilities.

1. To monitor continuously a number of parameters such as dust emission, gas levels, noise levels, wind speed, wind direction, rainfall, temperature etc.
2. To produce automatic reports on a regular periodic basis, and also on request. These reports can be produced instantly in either numerical or graphical format.
3. To provide a historical data base of logged information. The production of numerical and graphical reports will also be possible, using information in the data base. Reports can be based on data collected in just a few minutes, or over periods spanning several days or months.
4. To produce alarms in the event of particular user-defined environmental conditions (e.g. high wind velocities combined with excessive dust levels).
5. To enable the site engineer to access the system in order to examine the data.

The Beale Environment Monitoring Station has already been proved in the field, and orders for the system have been received from cement manufacturing and mining companies whose common concern has been the avoidance of local pollution. Other possible areas of application are in companies involved in: grinding; animal feedstuffs; oil refining; powdered products; iron and steel works; quarrying and coated roadstones; milling; bagging; chemical plant; plastic and rubber; coking plants; and lead extraction plants.

The data base for the system is set up on floppy disks which avoids the need to store vast amounts of paper. Only those

reports specifically required need be printed out. The system can be expanded and enhanced by adding further remote data acquisition units and further sensors (the software package supplied as standard allows for further sensors to be integrated into the reporting procedure). Telemetry via British Telecom circuits is optional but this can significantly reduce installation costs.

Above all, the system brings data from a variety of discrete devices to a central point, which makes it easier and quicker to read these instruments so that important information is neither overlooked nor ignored. Fast, accurate and reliable reports can be provided at the touch of a button.

Reader Enquiry Service No. 857

Pollution Control in Taiwan

The Anglo-Taiwan Trade Committee hopes to organise a seminar on pollution control and environmental protection in Taiwan later this year. The UK does not have diplomatic relations with Taiwan and the Anglo-Taiwan Trade Committee is the only body which directly assists British exporters. The Committee actively encourages companies likely to produce products relevant for the Taiwan market; promoting seminars is one of the means of doing this.

The Committee is aware that there is keen official and private interest in Taiwan in applying the latest techniques and equipment for the control of industrial pollution. It is therefore interested in contacting and sounding out as many relevant companies as possible who may be interested in participating in a seminar or product/system presentation in Taiwan.

The basic aim is to assist and encourage firms with products or expertise which could be sold and applied in Taiwan. Companies interested in the proposal should contact, direct, the Anglo-Taiwan Trade Committee, 4th Floor Minster House, 272-274 Vauxhall Bridge Road, London SW1V 1BB.

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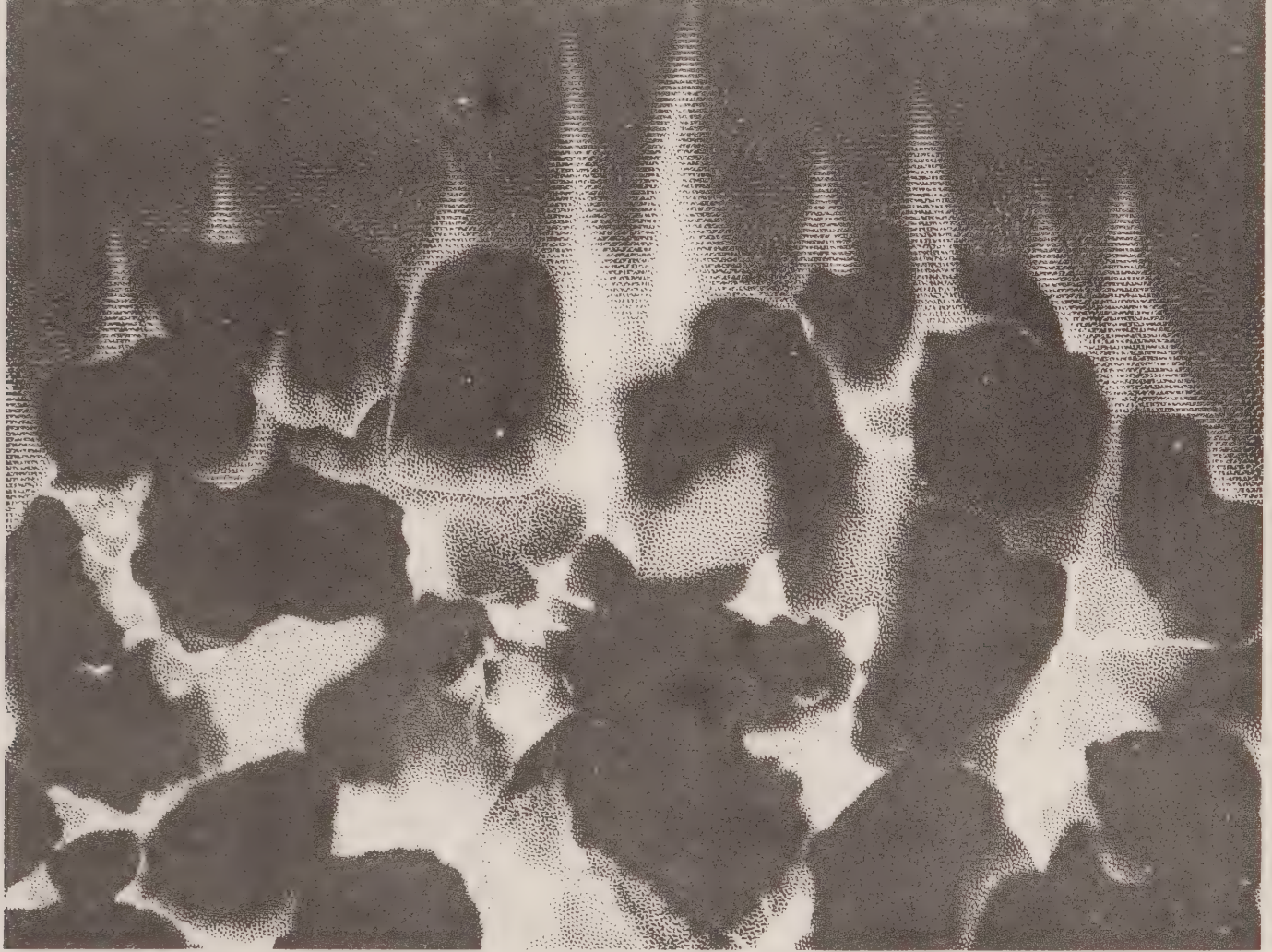
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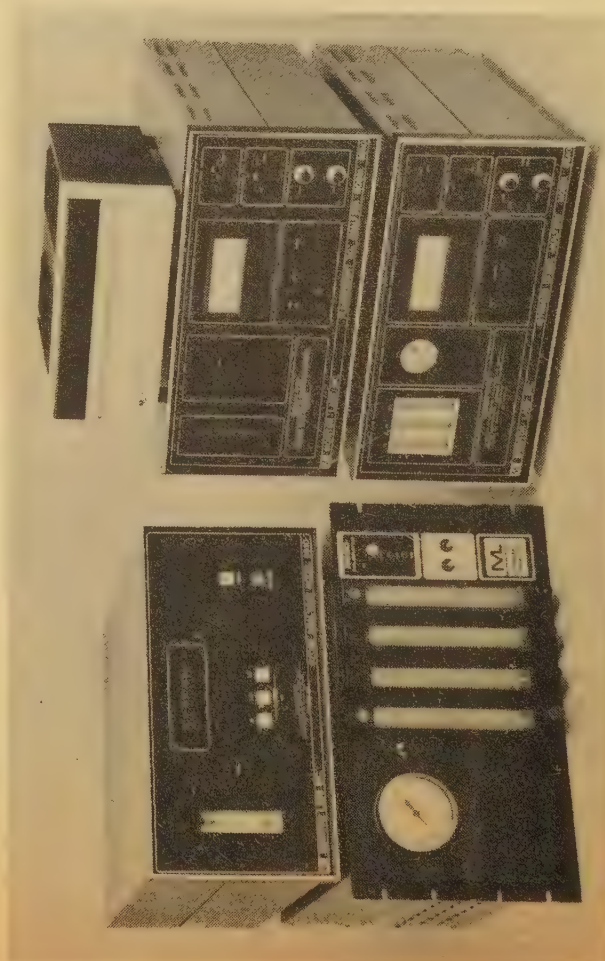
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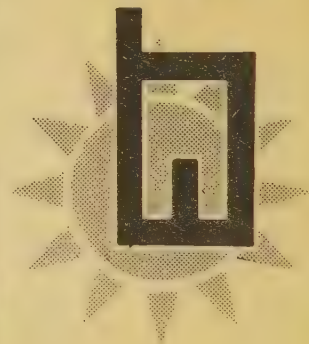
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CLEAN AIR

VOL.15 NO.2





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CLEAN AIR

THE JOURNAL OF THE NATIONAL SOCIETY FOR CLEAN AIR

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And now for the Good News

The usually quiet summer period is humming with activity for the Society. The campaign on straw and stubble burning is building up as the harvest season approaches. Dr. David Clark, MP, has tabled an Early Day Motion calling on the Government to accept the view of this Society and seven other national bodies — backed by the evidence in our report on the 1984 Harvest Burn — that straw and stubble burning be banned. The Society's Divisions have been asked to drum up support for the Motion, with all NSCA members interested in this subject being requested to write to their own MP on the subject. So far the Early Day Motion has attracted over 100 signatures from MPs, who have until the end of this parliamentary session to put their names to it.

Success for the Noise Committee has come in the form of support given by the House of Lords Select Committee on the European Communities to its recommendations on motorcycle noise. The Lords' Report, published in May, said that many complaints were due to silencers having been tampered with in an attempt to improve performance — a point made forcibly by the National Society for Clean Air. The Lords' Committee also pointed to the replacement of exhausts by unsatisfactory systems as a cause of noise, and the all-too-frequently thoughtless driving behaviour by motorcyclists — again, picking up on evidence given by the Society. Above all, the Committee accepted the NSCA's case for a simpler method of stopping and testing noisy motorbikes. The Committee recommended that there should be further investigation of the possibility of establishing noise traps, on the lines of the radar traps currently used to test speed. It considered that such random testing would act as a substantial deterrent to irresponsible motorcyclists and to those who might be tempted to modify their equipment.

But, lest anyone should think that the Society seeks only to constrain and condemn the Noise Committee decided at its last meeting that efforts made by individuals, companies, authorities or any other body to make life quieter should be given due publicity and encouragement.

We are therefore starting a "Good News" column in Clean Air to promote the good works of our members — and indeed those outside the Society. Don't be afraid of blowing your own trumpet. If you, your company or your local authority have scored a notable success in noise or air pollution control, let us know about it. Tell us about other people's achievements, too. And if good intentions and efforts are being hampered for lack of encouragement, perhaps the publicity we give will help. The first *Good News* column will be in the autumn issue of Clean Air, and all contributions will be welcome.

APPLICATIONS OF AIR POLLUTION MODELLING

— By —

D. Bird & G. Smith

Environmental Health Department
Sheffield City Council

INTRODUCTION

Sheffield City Council is a large Metropolitan District covering 370 km² with a population of some 545,800. The City's economy is traditionally based upon steel making, cutlery and associated trades and its primary pollution problems are related to this economic pattern.

In common with other major cities an environmental programme has been pursued over the years to handle gross pollution from industrial and domestic sources and Sheffield is now in a position to examine its remaining legacy of pollution as well as investigating and controlling other perceived pollution problems previously masked by high levels of smoke, sulphur dioxide and other traditional pollutants.

In order to fulfil its role as an Environmental Protection Agency the Environmental Health Department has instigated progressive policies to investigate and monitor pollution throughout the City. One of these processes is the use of computer modelling of air pollution which is the subject of this paper.

THE APPLICATION OF MODELS

Prior to Sheffield's work the only local authority to use modelling on a large scale was the Greater London Council. Five main areas of work were identified by them for applications of the modelling process:—

1. *In assessing trends in air quality*

For Sheffield this application is initially the most important. Combined with a suitable atmospheric dispersion computer model an emissions inventory enables simulation of present circumstances to be made. Furthermore, altering the emissions inventory to simulate possible future circumstances (change in fuel use) enables predictions of their impact on pollutant concentrations.

2. *In dealing with high pollution episodes*

With the aid of atmospheric dispersion models it is possible to predict short-term pollutant concentrations at ground level during forecast adverse weather conditions. This technique can be used to alert authorities to possible air pollution incidents and to determine strategies for avoiding them.

3. *In urban planning*

The knowledge of the likely geographic distribution of emissions can be an important aid

in land-use planning by identifying highly polluted areas and assessing their position in relation to residential or other sensitive districts.

4. In the economic assessment of policies which involve control of emissions to improve air quality

An emissions inventory helps the cost of proposed controls to be estimated and identifies who would bear them.

5. In the design of air pollution monitoring networks

The design of monitoring networks is important and an emissions inventory can aid in the location of higher pollution concentrations, thus suggesting where suitable monitoring equipment could be appropriately located.

These five descriptors adequately cover the use of models by Local Authorities.

CURRENT APPLICATIONS OF AIR POLLUTION MODELLING BY SHEFFIELD CITY COUNCIL ENVIRONMENTAL HEALTH DEPARTMENT

Lower Don Valley environmental assessment

Over the last two years the department has been investigating the application of the modelling process to Sheffield. Modelling work has been accelerated recently due to our involvement in a major environmental study of the Lower Don Valley (L.D.V.) which runs through the heart of Sheffield.

The majority of industry in Sheffield is located within the Lower Don Valley including the large steelworks associated with the area. Unfortunately the Valley area has been severely hit by the recession over the last ten years, and a significant proportion of industrial premises are now derelict or demolished.

It is recognised by the Council that the structure and size of the heavy engineering and steel making industries in the Don Valley cannot be recreated as they were before the economic recession. Plans are currently being drawn up by the Council to change the image of the now run down industrial area, and in particular draft proposals have been put forward to develop many of the derelict sites for recreational, leisure and housing uses.

It is in this context that the department has been asked to quantify current pollution levels and advise on trends in future years to ensure that pollution sensitive development would not be adversely affected if introduced into the Valley.

Before the recession air pollution levels in the Valley were very high and there was a strong presumption against permitting any pollution sensitive development into the area. The present levels of air pollution have declined dramatically from levels experienced in former years, and acceptable concentrations of pollutants in the atmosphere are now being approached.

From this background it has been decided that the most appropriate method of advising on both present and future levels would be to commence modelling work.

The usefulness of computer modelling for this project can be outlined in the following points:—

1. The L.D.V. area is a comparatively large area i.e. approx. 6 kilometres in length by 4 kilometres in width. There are many sites in the area which are being considered for redevelopment including areas both close to and remote from remaining industry in the area.

The conventional system operated by Sheffield Environmental Health Department for assessing the air quality affecting individual sites in this type of area would be to set up a series of air monitoring stations close to the site in question. It would not be accurate to refer to existing air pollution monitoring gauges in the Valley remote from the potential development sites as it is known that pollution levels can vary considerably, depending on orientation to the remaining industry in the area.

Monitoring gauges installed to investigate local areas in the Valley would have to be operated for a considerable time period to gain an accurate picture of pollution levels.

The proposed system of site assessment in respect of air quality would be to model pollutants in the Valley allowing ground level concentrations to be predicted for any position in the area being modelled thereby obviating to a certain extent the necessity for extensive monitoring. This prediction method can only, of course, be used after the model has been effectively validated. Work is currently being undertaken to model sulphur dioxide in the Lower Don Valley and surrounding area and the success or otherwise of the proposed prediction method will soon be known. The description of the work is detailed later.

2. A successful pollution dispersion model for the Valley situation would not only allow predictions to be made of existing ground level concentrations in the area encompassed by the model but would allow future levels to be predicted based on removal or introduction of pollution.

Predictions from the model could ultimately influence whether a new pollution source might be introduced into the Valley, depending on its effect on ground level concentration.

This type of prediction would be extremely important in the L.D.V. situation as it is envisaged that several types of land use may be incorporated into the new plan for the Valley, including industrial, commercial, recreational and residential use.

Combined Heat and Power scheme for Sheffield

The department is also currently investigating the use of the modelling process as part of

an Environmental Impact Assessment in respect of the introduction of the above scheme in Sheffield. The current Sheffield study of combined heat and power (CHP) was initiated by Government investigations into the feasibility of introducing CHP into nine cities in the United Kingdom. Since that original study the Council has been awarded a grant by the EEC to undertake a detailed feasibility study of the proposed scheme which also includes a major Environmental Impact Assessment of the proposals.

Briefly, the combined heat and power scheme entails the construction of a 300 MW combined cycle gasification plant at Tinsley in Sheffield which will provide district heating to a large area of Sheffield. The gasification plant is supplemented by a large heat only boiler, and waste heat from a municipal incinerator. Fig. 1 indicates the position of the heating stations and the proposed area served by the centralised heat sources, i.e. heat load area.

The Environmental Impact Assessment in respect of air quality will entail investigation into the potential benefits and disbenefits of such a scheme which are listed below.

Benefits

Lowering in levels of air pollution, in areas served by heat stations as combustion of fuel in heat load area dramatically reduced.

Disbenefits

- 1) Emissions from the gasification plant.
- 2) Emissions from the heat-only boiler and incinerator.

In respect of quantifying the benefits it is necessary to know the existing quantity of emissions of pollutants from the district heating area and to relate them to present day pollution levels. If this relationship can be found, then it is relatively easy to predict the expected reduction in ambient pollution levels, if the scheme is introduced.

This process can only be carried out by using a pollution dispersion model which is validated by comparison with results from monitoring stations in the area.

At this stage I will describe the progress which has been made by the department towards achieving the aims of modelling in the situations mentioned previously.

A) Acquisition of air pollution dispersion models

The department has recently purchased the Unamap Version 5 suite of programs compiled by the Environmental Protection Agency of America. The suite includes 31 separate dispersion models which cover a wide range of modelling situations.

The model which the department intends to use for the projects mentioned previously is known as the Valley Model. The Valley Model, as its name suggests, takes account of topographical features in the area encompassed by the model and it is felt that it will be suitable for the Lower Don Valley and in fact for the majority of Sheffield, due to the land relief in this area.

Fig. 1 — Map showing heat load area for Sheffield's Combined Heat & Power Scheme

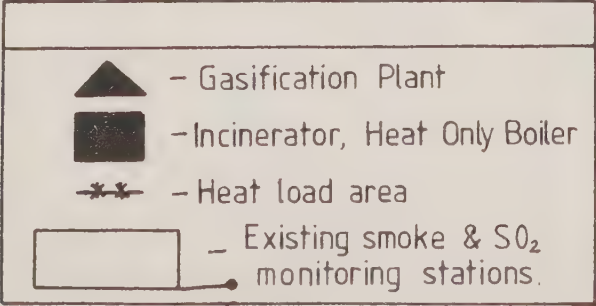
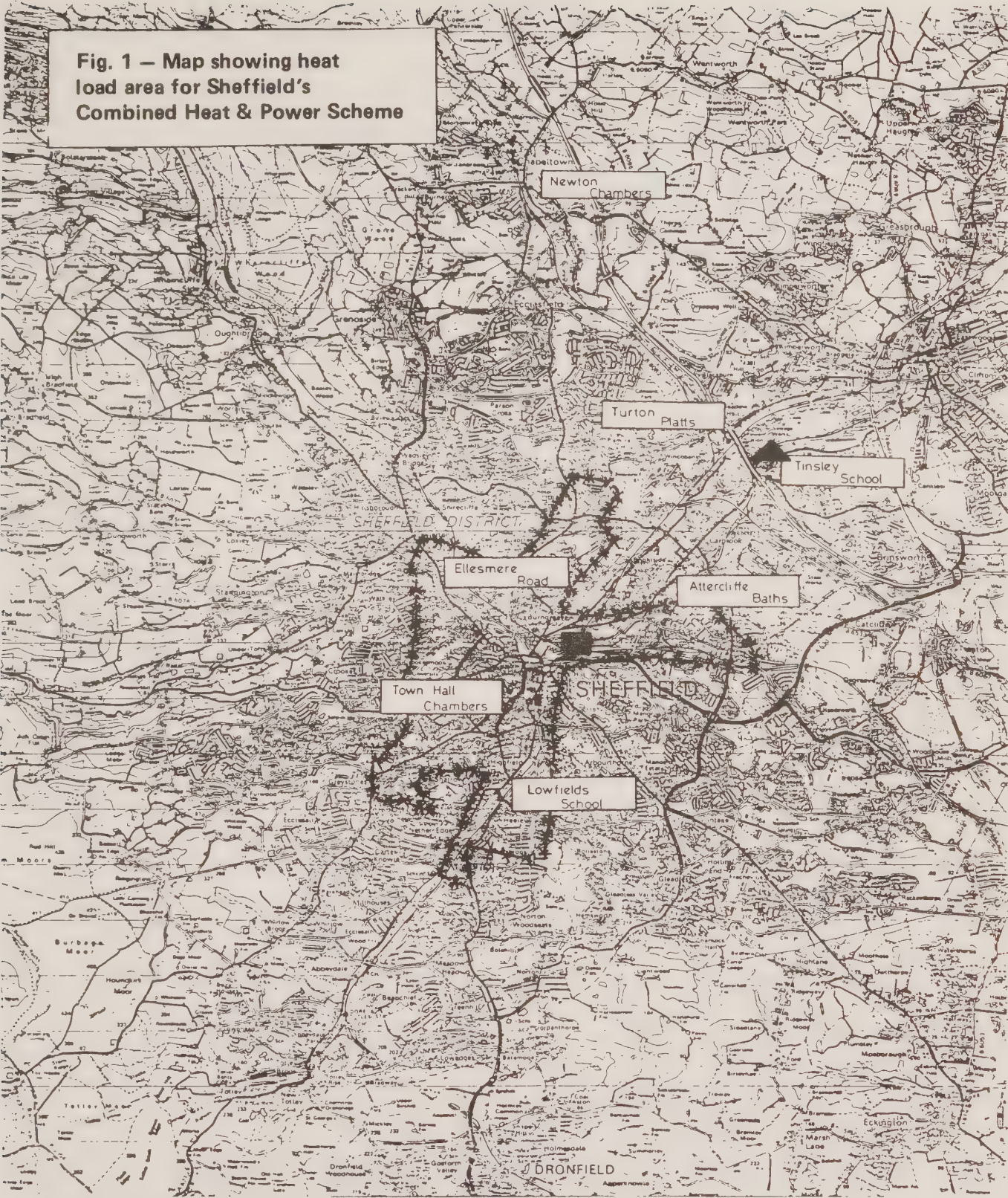


Fig. 2 Domestic emission sources — compilation of data

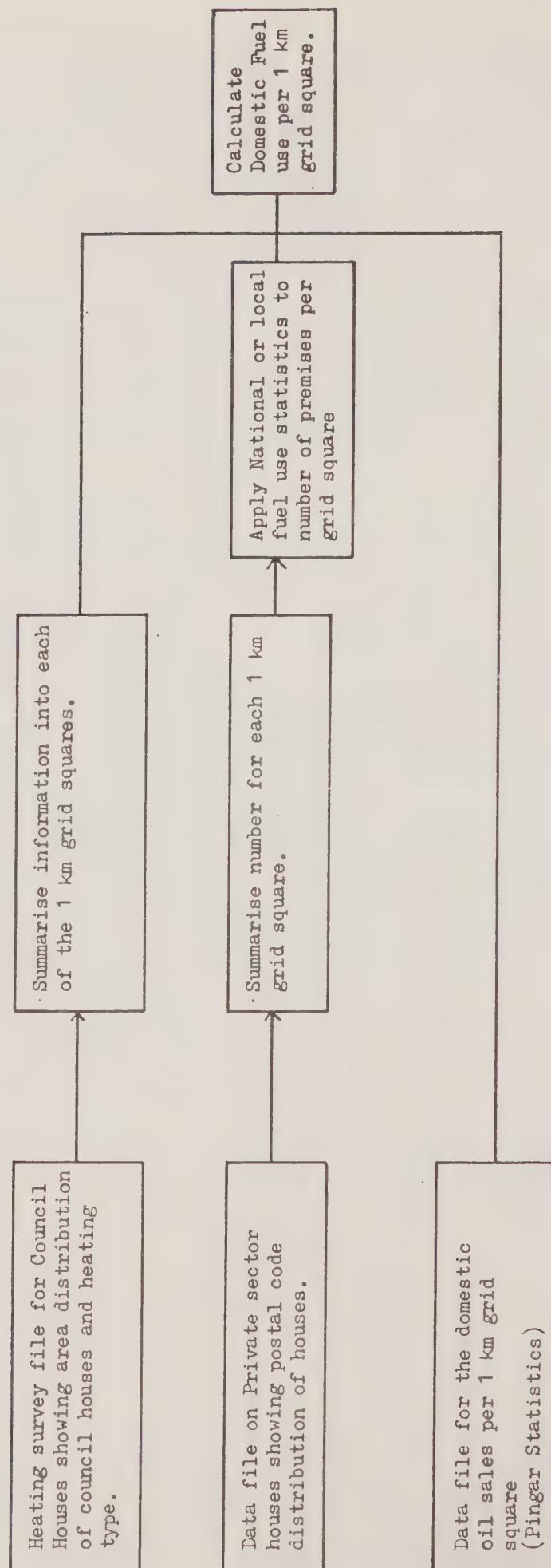
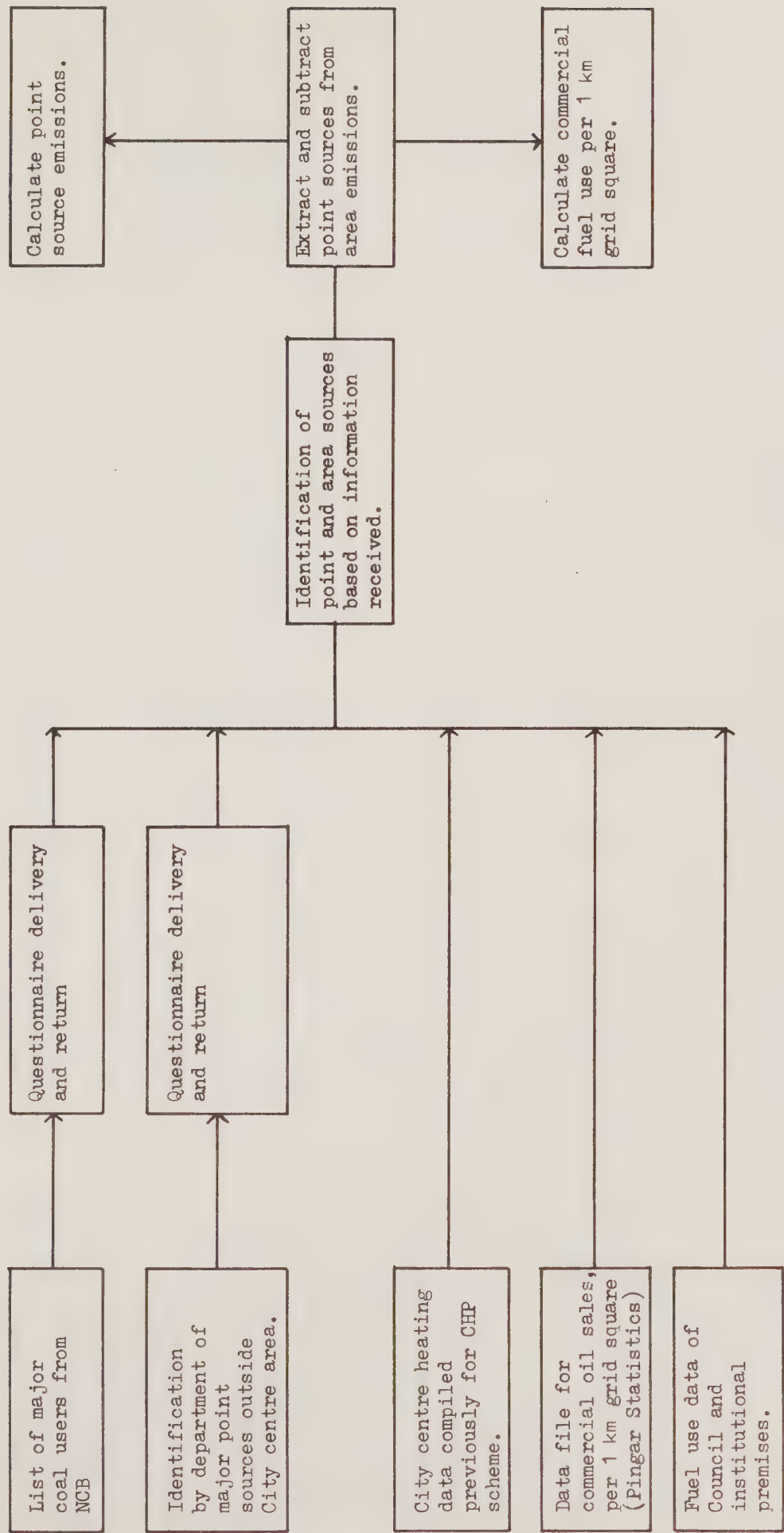


Fig. 3 Commercial and institutional emission sources - compilation of data



The Valley model is described by the EPA as a "steady-state univariate Gaussian plume dispersion model designed for multiple point and area source applications. It calculates pollutant concentrations for each frequency designated in an array defined by six stabilities, 16 wind directions and six wind speeds for 112 program designated receptor sites on a radial grid of variable scale. The output concentrations are appropriate for either a 24 hour or annual period as designated by the user".

The three main inputs into the model by the user are an emissions inventory for the pollutant concerned, relevant meteorological data, and receptor heights.

The following sections detail the department's current work into the inputs required for the model.

B) *Emissions inventory*

At the time of writing the department has nearly completed an inventory of sulphur dioxide emissions to atmosphere from the Lower Don Valley, and the proposed area to be served by district heating if the combined heat and power scheme proceeds in Sheffield.

Sulphur dioxide has been chosen as the first pollutant to be modelled in Sheffield, for several reasons:

- 1) the level of this pollutant in the atmosphere is an important guideline on the current air quality of an area;
- 2) sulphur dioxide levels were extremely high in the Lower Don Valley area before the recession and it is important that the department quantifies the current ambient levels by relation to the remaining sources in the Valley;
- 3) sulphur dioxide ambient levels are likely to fall in the city if the combined heat and power scheme is developed;
- 4) it is relatively easy to predict sulphur dioxide emissions from fuel use information and therefore an accurate inventory can be undertaken.

It is our opinion that the success or otherwise of modelling work depends on an accurate inventory, and careful thought must be given before compiling an inventory of any pollutant.

Methodology

The inventory was divided into three main sections i.e. Industrial, Commercial and Institutional, and Residential emissions of this pollutant per 1 km grid square. Figs. 2–5 indicate by means of a flow diagram the methods used to complete this task for each type of premises.

Inventory of industrial emissions

The majority of industrial premises in Sheffield are located in the Lower Don Valley area of Sheffield. The industrial inventory of sulphur dioxide was undertaken by direct approach to all firms in the L.D.V. area. Two questionnaires were designed to allow information to be obtained regarding, firstly, emissions of this pollutant from other industrial processes.

The design of the questionnaires, whilst mainly biased towards emissions of sulphur dioxide, also allowed the department to record information about other processes at the firm and associated pollution sources. This additional information was valuable, due to our current detailed involvement in the Lower Don Valley environment assessment, and may also be a useful source of information if other pollutants are to be modelled in future.

All questionnaires were delivered by hand and given to the person at the firm who would complete the forms. This method was chosen, as it was found from a pilot survey that by posting questionnaires they often were lost or mislaid within the administrative system of a firm. The other advantage of personal delivery was that it enabled the department to develop links with industrialists in the L.D.V. area.

This method has proved to be a valuable exercise as it is the intention of the department to form a pollution consultative panel under the terms of Section 79/80 of the Control of Pollution Act 1974 for the Lower Don Valley involving industrialists, residents' associations, pollution regulatory agencies and other persons with an interest in pollution affecting this area.

It must be stressed that this method of compiling the industrial inventory was dictated in large by the department's involvement in the L.D.V. and the method would probably be too time consuming for authorities wishing to concentrate purely on an inventory of sulphur dioxide emissions.

Inventory of commercial and institutional emissions

The commercial and institutional inventory was compiled by the following methods.

1) The majority of commercial premises in the city centre area had already been surveyed by the Council, to determine existing heating type and fuel use data as part of the information required for the proposed combined heat and power scheme for Sheffield. The proposed implementation of the scheme envisages in fact the majority of city centre buildings served by district heating. The data collected allowed the department to calculate sulphur dioxide emissions for the city centre area.

2) Information from the fuel supply industries in the area allowed the department to identify commercial and institutional premises outside the city centre area which would contribute to total sulphur dioxide emissions in the study area. Questionnaires were

delivered to many of these identified premises, so that detailed information on fuel use and type could be obtained.

3) Many institutional buildings in Sheffield are Council owned and direct approval to the relevant departments allowed the department to acquire valuable information re. fuel use and type.

4) Pingar statistics (Described later in paper.)

Residential inventory of emissions

The residential inventory of sulphur dioxide emissions has been compiled by the following methods:

- 1) For council houses a study had previously been undertaken by the Council's Housing Department to determine different types of heating and fuel use within the housing stock. The survey results related to the number of housing units with a particular heating type contained in geographical areas which had been delineated for rent collection purposes. It was necessary to convert this information so that the number of housing units with a particular heating type contained in geographical areas which had been delineated for rent collection purposes. It was necessary to convert this information so that the number of housing units with a particular heating type could be calculated for a 1 km grid square.
- 2) For private houses, two main steps were involved:
 - a) the total number of private houses in the study area was sub divided into 1 km grid squares by reference to post codes on a ratings list;
 - b) the proportion and amount of different fuels used by private houses was found by direct approach to local fuel supply industries.
- 3) The above information allowed the department to calculate emissions of sulphur dioxide from the residential areas as detailed information on fuel use and type was available.

The inventory has been used to allow the effective sulphur dioxide emissions to be calculated for each 1 square kilometre in the area encompassed by the model which, in the case of our current work, was 100 square kilometres. It is necessary to summate all contributions of sulphur dioxide in each 1 km square for ease of input into the Valley model.

Large emissions of sulphur dioxide from an individual source, e.g. high capacity boiler plant, are usually treated individually for the purposes of the model and referred to as point sources as opposed to emissions from a residential area which are referred to as area sources.

There are several useful points worth noting in the compilation of an inventory for sulphur dioxide.

- 1) Each authority or organisation will have different information sources available to hand in respect of compiling an inventory.
- 2) Detailed information on land use, combined with information from fuel supply industries re. fuel use in the modelling area, can allow predictions to be made of expected sulphur dioxide emissions in the modelling area. This procedure is based on methodology used by the Greater London Council in compiling an inventory of sulphur dioxide in the London Area (Ref GLC Research Report 23).
- 3) In Sheffield there was no detailed land use information and therefore the above method could not be used. Also we experienced difficulties in obtaining suitable information from the local fuel supply industries, because, for instance, the modelling area was contained within much larger marketing areas of the local fuel supply industries. In most cases there was no method available to proportion the total fuel use figure in the marketing area, to the smaller defined area.
- 4) An important source of information which may be useful to other authorities wishing to obtain detailed information concerning fuel use and ultimately a sulphur dioxide inventory is known as Pingar statistics compiled by the Department of Energy. These statistics incorporate the amount and type of fuel oil delivered throughout the United Kingdom, and for many large towns the delivery data refers to 1 km squares in that area.

This information has been purchased by the department to ascertain fuel oil usage by various classes of premises in Sheffield and will be used as a cross check on the existing inventory.

C) Meteorological inputs in the model

Meteorological parameters are inherent in the Gaussian Plume Dispersion Model, since part of the mathematical model is determined by a function of atmospheric stability. It is therefore essential to collect accurate meteorological data for an area being modelled, though in practice this may be difficult to achieve. The key atmospheric parameters that need to be collated in order to determine atmospheric stability are windspeed, wind direction, mixing height data, levels of incoming solar radiation and cloud cover amounts. This information is also required for both day and night periods.

Generally, meteorological data can be supplied from the Meteorological Office, which collects data from a number of sites throughout the country. However, due to the detailed level of information required, especially in respect of mixing height data, and due to the need for both day and night measurements, the availability of this information is severely limited. The main sources of such data in this country are restricted to the major and regional airports and RAF bases, where data collection on upper air movements is essential for aircraft using such ports.

In Sheffield, therefore, the Met. Office has supplied data for the City from its nearest 24 hour monitoring station, which is RAF Finningley some 15 miles to the north east of the city. In this respect it is fortunate that there is such a base so close to the city; other centres of population may not be so lucky. It is hoped that this information will provide

an accurate picture of the weather conditions in Sheffield over the period being modelled (a year).

Once gathered, the information is collated into a joint frequency function comprising wind direction, wind speed and stability category. The method used by the Valley model uses 16 wind directions, 6 wind speed classes and 6 stability categories based on the scheme devised by Pasquill and Gifford originating in the 1960s. The Meteorological Office have developed their own joint frequency function and can provide data in this form; however, their system is incompatible with the Valley model being used. In order to get round this problem only raw data as detailed above have been supplied by the Met Office and programs have been developed to convert the data into the appropriate joint frequency function. An example of the output from the program is given in the Figure 7.

D) *Receptor height data*

One of the most important aspects of the Valley Model is the effect of terrain on ground level pollutant concentrations. As such a computer run of the Valley Model requires a network of 112 receptor heights to be entered in the Model. The user has two controllable elements:

- i) ground elevation at receptor points;
- ii) scaling factor.

Ground elevation at receptor points

Sheffield is shortly computerising the ground level heights for every square 10 metres throughout the town. This will be invaluable data for future work with the Valley model. Presently, the task of creating this input data is time consuming and involves ploughing through Ordnance Survey maps and obtaining heights for various locations required for any particular run of Valley. However, prior planning and computer programs to sort the data can alleviate this task considerably and still enable many different runs to be carried out.

Resources Necessary and Cost Effectiveness of the Modelling Projects in Sheffield

The resources which have been utilised for modelling work to date can be divided into the following sections on staffing and equipment.

Staffing

Three staff are involved in the modelling work, i.e. an Environmental Health Officer, a computer programmer/statistician and an Environmental Science Officer. Since the start of the project in May 1984 the effective time spent has amounted to the equivalent of two members of the team working full time on the modelling work.

It is essential in our opinion to have an experienced computer programmer as part of a

team involved in modelling work to input the relevant data into the model correctly. Much of the work has involved the writing of suitable programs to compile the emissions inventory into a suitable form.

Equipment

The following main items of equipment and information have been purchased in respect of the modelling work.

<i>ITEM</i>	<i>COST (£)</i>
Computer dispersion models	1974
Computer terminal	2280
Annual meteorological data	1200
Questionnaires (printing charge)	170
Pingar statistics	100
Maps	133
TOTAL	5857

The dispersion models which are written in Fortran run on the Council’s mainframe computer. It is essential that any local authority or organisation wishing to undertake air pollution modelling on a large scale should have access to computer facilities and detailed investigations must be undertaken to ensure that the computer models are written in a form of language that is compatible with the computer system used. We experienced considerable difficulties at first with the tape supplied by the Environmental Protection Agency as the method of coding the programs on their UNIVAC tape was totally different from that used by the Council’s ICL system. To resolve this matter the tape was sent to ICL, and converted into a suitable form. There were also some operational differences regarding the Fortran used by the UNIVAC system as compared to the ICL. These had to be edited into a suitable ICL format.

Cost effectiveness

If the modelling work is ultimately successful in Sheffield for a number of pollutants, the benefits will outweigh any cost implications as the air quality of an area can be effectively linked to pollution sources within that same area. This is a large step forward from the current system of air quality monitoring and it is in our opinion the way forward in respect of air quality management.

The main cost benefit of modelling in the Lower Don Valley in Sheffield is that a validated model for the Valley situation could offset the expenditure which would be necessary on the installation and servicing of new air pollution monitoring stations in respect of assessing the air quality of development sites in the area. These investigations will be a major part of the Lower Don Valley environmental assessment and obviously a prediction method for air quality will reduce the cost of additional air pollution monitoring stations.

As can be seen, the capital expenditure necessary to undertake modelling is not great, subject to computer facilities being available. It should be noted that the cost of the meteorological data will be ongoing expenditure as the relevant data must be purchased yearly. The staff resources for the project are, however, relatively large, and are likely to remain so until the completion of the work programme. A city such as Sheffield can effectively justify staff employed to undertake modelling work due to the large area covered and the multitude of pollution sources within that area. It is unlikely, however, that smaller authorities could afford to utilise members of staff working full time on air pollution modelling work.

Summary

The Environmental Protection Unit of the Department has taken the first steps towards a more comprehensive system of pollution assessment.

It is hoped that when the modelling work is completed it will be of great benefit in the development of the city's planning and control policies and will assist the Unit to handle new and complex pollution problems as effectively as it has handled the problems of the past.

LETTER TO THE EDITOR

From E.S. Tomlinson, Branch Secretary, on behalf of the Institution of Professional Civil Servants, IAPI Branch

Effective control of industrial air pollution

I must congratulate the author of the article on the Inspectorate (*Clean Air* 15 No 1, p 24) and convey the agreement of the Inspectors with the sentiments expressed. In addition, when the Health and Safety Executive was formed the Royal Commission on Environmental Pollution was asked to look into the question of the location of the Inspectorate. RCEP reported strongly in favour of removing the Inspectorate from HSE (where it is an anomaly, being the only inspectorate which has no worker protection function) and returning it to DoE. RCEP foresaw that the existing location would result in air pollution being downgraded in preference to worker protection. This is now clearly happening, as illustrated by the following — the Inspectorate's sampling team has been transferred into the Factory Inspectorate's control and where, prior to HSE, the Chief Inspector (of now IAPI) reported directly to the Minister, the chain of communication is now via 4 or 5 levels of management to the Secretary of State; all the personnel involved having no direct interest in air pollution or its control.

If the recommendations of the RCEP/5 regarding "Best Practicable Environmental Option" had been adopted, together with the return of the Inspectorate to DoE, an Environmental Protection Division could have been formed capable of dealing with the UK's environmental problems in a co-ordinated and efficient manner and ensuring amongst other things that the "Good Effective Industrial Air Pollution Control" of the past would continue and not disappear as it may under the present system.

UPDATE

NSCA 1985 WORKSHOP EXAMINES AIR QUALITY ASSESSMENT TECHNIQUES

In March 1985 some 80 delegates and speakers gathered in Warwick, England, for the 1985 Spring Workshop organised by the National Society for Clean Air. The subject for discussion was monitoring and modelling techniques and their use in air quality management, in the context of international concern about acid rain and more local strategic planning needs.

Both local and central authorities have to be aware of the effects of polluting activities in order to prevent any adverse impact on the community and permit sensible development to take place. In the past, the pattern was to monitor for several years in order to acquire sufficient data so that trends could be established with confidence. On the basis of these trends strategies could be developed which would arrest, rather than prevent, deterioration in the environment. Now, the application of modelling permits the development and implementation of control strategies far earlier; action can be taken to prevent deterioration in the environment almost before it has begun. One of the speakers at the Workshop, Dr. Duncan Laxen of the Greater London Council, likened the change to the use of preventative medicine rather than being obliged to employ intensive care! Other speakers discussed various examples of the applications of numerical models in the UK. Graham Smith of Sheffield City Council described work underway in that city to assess the introduction of

pollution-sensitive housing and industry into a previously very polluted industrial area; Sheffield was using a model devised by the US EPA. Another Sheffield project, being undertaken with the help of the EEC funding, is looking at the potential effect of introducing a Combined Heat and Power scheme in the city.

Discussion of monitoring techniques ranged over the difficult art of stack gas monitoring, area surveys and automatic sampling and analysis of the pollutants of greatest current concern. In an interesting presentation, Peter Caunt of the Central Electricity Research Laboratory in the UK discussed the relative merits of mobile and fixed monitoring sites. He explained that the great advantage mobile laboratories have over fixed sites is flexibility and adaptability, while the principal disadvantage is that they are manpower intensive. The CEGB's North Western Region has now adopted a flexible system which combines both fixed sites and the use of a mobile laboratory, which makes it impossible to monitor ground level concentrations at the point of maximum impact.

Don Munns of IAPI provided a fascinating insight into the perilous world of stack gas sampling — a world to which the inspector must come equipped with an excellent head for heights, ingenuity and nerve.

Workshop papers are available from the NSCA, at 95 pence each. Part II — Discussions — will be published shortly.

BRITAIN SAYS NO TO CATALYSTS

Now here is an oddity. According to junior Environment Minister, William Waldegrave, the British Government has played a prominent role in the Community negotiations which will lead to tighter vehicle emission controls (for details, see last issue, *Update*, page 35.) But in the House of Lords on 22 April 1985, Lord Brabazon of Tara, speaking for the Department of Transport, said "... the Government do not intend to impose standards on vehicles sold or used in this country which would require manufacturers to use catalyst technology". So the Government leads the way to Community-wide adoption of stringent emission standards for road vehicles — then says it won't bother with them anyway. The reasoning seems to be that we do not in this country have the same problem with vehicle emissions as do countries in central Europe.

West Germany, Switzerland, Austria, the Netherlands and the Scandinavian countries (between them responsible for 1/3 of total annual new car registrations in Europe) are all committed to adopting stringent exhaust emission standards which look certain to entail the use of catalysts on the largest cars (those over 2 litres). The commitment in the UK and in other European countries is much weaker. This variation in approach is

possible under the EEC agreement which is permissive, and the British Government is very keen to promote the use of the so-called lean-burn engines now being developed in this country. It appears

that the Department of Transport is taking a lead in deciding not to penalise UK car manufacturers in their progress towards an environmentally acceptable lean-burn engine — the technology of the future. As a result, there will be no requirement to fit oxidation catalysts before 1991 for new type approvals and 1 October 1993 for all new car registrations. To quote Lord Brabazon: "... a single path of engine development will serve both for markets which demand this standard and for those parts of Europe where there is no demand on environmental grounds for cars to be equipped with catalysts".

However, a note of dissent regarding the capability of current lean-burn engines to meet tough exhaust emission standards has been sounded by Dr. Ulrich Seiffert, Volkswagen's Head of Research. He said that the true lean-burn engine, capable of a 22: 1 air to fuel ratio is still some years from being in production and it will probably cost as much as a car equipped with catalysts.

The European Commission has now worked out the standards for exhaust emissions which it will recommend for acceptance by the Council of EEC Ministers on June 25. The standards have been worked out according to the European Test Driving Pattern and would apply to the different car size categories as follows:

PROPOSED PERMITTED LEVELS OF EXHAUST EMISSIONS

Car size	Grammes of pollutant			Legal start date	
	CO	HC+NOx	NOx	New models	New cars
Over 2 litres	25	6.5	3.5	1:10:88	1:10:89
1.4-2 litres	30	8	4	1:10:91	1:10:93
Under 1.4 litres	45	15	6	1:10:93	1:10:94

Permitted levels are calculated on the basis of standard running tests for engines in the different categories.

ASBESTOS SAFETY STUDY CONCLUDES HAZARD STILL GREAT BUT RISK SMALL

The report "*Asbestos — Effects on health of exposure to asbestos*" prepared by Sir Richard Doll and Professor Julian Peto for the Health and Safety Commission was published in April 1985. When it appeared, it was welcomed with relief by many journalists. The headline in *The Sunday Times* was typical: **Asbestos Panic Can Stop, Says Top Cancer Expert.**

In fact, there was some danger of the report not so much allaying fears as inducing a dangerous state of complacency and the Health and Safety Commission was quick to dismiss suggestions that exposure to asbestos is any safer following publication of the report. The *hazard* posed by asbestos at work or in a dangerous condition in the general environment is just as great as it ever was — but the report highlights the fact that the *risk* of exposure to asbestos is diminishing with the application of tighter control standards.

The Doll and Peto Report concentrates on those aspects that have been most in doubt and are important for the practical purposes of control: the types of cancer induced by exposure to asbestos, the relationship between the amount of chrysotile exposure and the frequency of asbestos related disease, and the relationship between smoking, asbestos exposure and disease. It will be remembered that Professor Doll was instrumental in demonstrating the link between lung cancer and smoking, and he quite rightly returns to the subject in this report by showing that the risk to non-smokers is relatively small even after quite heavy asbestos exposure. The report concludes

on the basis of available data that the synergism of cigarette smoke and asbestos suggests that the two agents multiply (or nearly multiply) each other's effect. Thus, if you smoke and work within the most hazardous occupation (insulation work) your risk is of a very high order indeed.

The part of the report so widely trumpeted in the press — the review of asbestos in buildings — is very brief and draws heavily on the review of published studies by the Ontario Royal Commission and the results of measurements made in British buildings on behalf of the Department of the Environment. The conclusion is that the risk is so low as to be negligible: equivalent to approximately one death per year in the whole country. This effect was estimated from the predicted risks for exposure to chrysotile: exposure to crocidolite would produce appreciably greater effects. Nevertheless, the overwhelmingly reassuring message is difficult to ignore and unless you happen to be the unfortunate one individual per year statistically likely to be afflicted, one can well understand the whole country heaving sighs of relief. But the estimate relates to the *average* situation; if asbestos was allowed to deteriorate unchecked in buildings and people were allowed to use those buildings while the asbestos was in a poor condition, the position would be very different. Thus, constant vigilance is still needed in order to check on the condition of asbestos in buildings in daily use, and to act at once and with all due care where asbestos material is found to be in a dangerous condition.

Asbestos-effects on health of exposure to asbestos is available from HMSO, price £5.00.

NEW PROPOSALS ON LARGE COMBUSTION PLANT

The Commission of the European Communities has proposed amendments to the proposal for a Council Directive on the limitation of emissions from large combustion plant (11642/83). The amendments are largely in line with the recommendations of the European Parliament, but the Commission has also stated its intention to propose emission limits for fluidised bed combustion plants, separately at a later date.

Meanwhile the significant changes proposed are as follows:

1. the introduction of an intermediate category of plant, between 100-300 MW (thermal) capacity;
2. a tightening of sulphur dioxide limit values for intermediate-sized plant burning solid fuel;
3. a tightening of the nitrogen oxides limit values applying to plant over 300 MW burning solid fuel with effect from 1985 — and from 1995 more stringent NO_x limits to be applied to these and most other plant.

These amendments present the UK Government with even greater difficulty in accepting the draft Directive, in that the specific emission reduction requirements will be even greater than originally proposed. The UK Government would prefer to reach an agreement with other Member States which would allow a more flexible approach to be taken on emission reductions; the Government believes that the UK should be credited for achievements already made, and that the potential contribution of new technology should be counted on to provide more cost effective solutions than those which

would be required within the currently proposed timescales.

BID TO END ENVIRONMENTAL SECRECY

As noted in the last *Update* (Vol. 15 No. 1, page 34) the Government has endorsed the principle of freedom of information on environmental pollution. The Health and Safety at Work Act is to be amended to allow greater disclosure of information, with the Health and Safety Commission issuing a consultation document on other possible disclosure measures. On a broader front, an inter-departmental working party has been set up by the Government to look at the whole question of environmental secrecy. The working party is expected to publish a consultation paper before the summer parliamentary recess; after receiving comments, it is scheduled to produce a final report by the end of the year.

Meanwhile, the Campaign for Freedom of Information is pressing ahead with its own proposals for legislation. These are to be presented in the form of a 10-minute rule bill on 26 June by Nigel Forman, MP. The Campaign's proposals aim to provide a legally enforceable right of access to information, but the bill does not propose complete access to all information. It recognises that there are legitimate reasons for keeping certain details confidential and incorporates nine classes of exemption. Thus, information that would seriously impair defence, security, international relations, interfere with the policy advice given by officials, invade the privacy of an individual or give unfair commercial advantage to competitors would all be protected.

The proposals provide for a uniform set of principles and procedures which would apply to all departments and authorities with pollution responsibilities. Under the present arrangements, with the Health and Safety at Work Act and the Control of Pollution Act provisions, some authorities have to make information public, others are permitted to do so and yet others are forbidden to do so. The bill lays down an effective and independent appeals procedure by establishing an Environmental Information Commissioner with powers modelled on those of the recently created Data Protection Registrar.

The bill would apply to all government and local authority departments and public research bodies which have duties or perform work related to environmental protection. While the main intention is to make available information to those who ask for it, the bill would also require authorities to provide information without being asked, if they considered that there was a risk to health or property. In this way it is intended to ensure that all members of the public have the same rights as are currently enjoyed by employees in relation to hazards at work. The bill would also require disclosure by dischargers, on request.

In the event of the bill becoming law, documents drawn up before that time would not be disclosable unless they contained purely factual information about the hazards of a substance or measurements of pollution levels. Documents prepared after that time that would be disclosable include: results of environmental monitoring and related documents, and details of discharges to the environment. The Bill would require departments and authorities to provide

indexes to enable the public to identify the kind of information held on record.

Copies of the draft *Environmental Pollution Information Bill* are available from — Campaign for Freedom of Information, 2 Northdown Street, London N1 9BG. Telephone: 01 278 9686.

NEW CHIEF FOR CoEnCo

CoEnCo, the Council for Environmental Conservation, has appointed David Hughes as Executive Secretary. Mr. Hughes was formerly Parliamentary Officer at the Federation of Civil Engineering Contractors. He contested the Westbury (Wiltshire) Constituency as a Liberal/Alliance candidate at the 1983 General Election. Edward Dawson remains with CoEnCo with particular responsibilities for fund raising.

DOE AID FOR HEAVY METAL STUDIES

The Department of Environment has presented a £200,000 British designed and built mass spectrometer to the School of Medicine at Southampton University. Known as the "Plasmaquad", the machine is highly sensitive and capable of analysing individual atoms in human plasma. This makes possible much more accurate measurement of the levels of heavy metals in the population and identification of the most important individual sources of the metal. The Southampton School of Medicine will use the machine for various studies, including the DOE's own investigations into potential health hazards to children of metal traces in household dust, and the national blood lead monitoring programme.

DOE is also providing help to local authorities monitoring lead in air in conformity with the 1982 EEC Directive. DOE has purchased 30 sets of samplers which comply with the Directive's requirements. These can be borrowed by local authorities who can then operate them for a period of usually six months in order to find out whether a particular area complies with the Directive. Samples taken are to be centrally analysed.

NEW DIGEST OF ENVIRONMENTAL POLLUTION STATISTICS

The Department of the Environment published the 7th in its series of Environmental Digests in May 1985. The title has subtly changed over the years and the report is now called "Digest of Environmental Protection and Water Statistics". New topics included this year are derelict land and mineral workings, direct discharge of pollutants into coastal waters, and woodland areas and upland landscape. The report is nicely presented with green ink being used on various graphs. Fortunately, it photocopies well in black and white: one of the great advantages of this publication is that brief extracts are permitted to be reproduced providing the source is acknowledged. The NSCA makes regular use of this permission!

As to trends, the report confirms the downward trend in sulphur dioxide and smoke emissions. SO₂ emissions are now below the 1940s level. High level emitters account for almost three quarters of total emissions. Average urban concentrations of SO₂ have fallen

by over 70% since 1962, in line with the reduction in emissions from low level sources. Average urban concentrations of smoke in 1982/3 were about 1/8 of the level in 1962/3.

The picture is less satisfactory when it comes to hydrocarbons emissions. These are estimated to have risen 36% in the ten years from 1973 to 1983. The report says that this is almost entirely as a result of increases in gas leakage. This is a worrying trend and positive steps should be taken to reverse it. Another rising trend is in complaints about noise from road traffic and domestic sources. Complaints received by Environmental Health Officers about road traffic have increased sixfold over the ten years since 1973 and there has been a 30% rise in the last 15 months.

Domestic noise sources are also giving rise to increased aggravation: over the ten years from 1973 to 1983, complaints rose elevenfold and complaints were 26% higher in 1983/84 than in 1982. These statistics indicate an increase in public concern about noise which of course the NSCA is very well aware of from the interest shown in the formation of our Noise Committee. The largest and most widespread environmental noise source is road traffic. Even allowing for the increase in the number of licensed vehicles on the road, there were 8% more successful prosecutions in the Magistrates' Court in 1983 than in 1978 and 44% more written warnings in the same period. There was also a marked increase in complaints about noise from "other" sources — which cover a variety of activities including roadside car maintenance, sports, refuse collection and train movements.

The Digest includes a chart taken from the United Kingdom review group report (1983) on Acid Rain, showing deposited acidity in the UK. This shows that deposited acidity is high in areas of high rainfall such as Cumbria and West Central Scotland since the total amount of wet deposited acidity depends on the amount of annual rainfall as well as its acid content. As to lead, the trend is downward due to legislative reduction in the maximum lead content of petrol — from 0.84 g/l in January 1973 to 0.40 g/l in January 81. Thus while petrol consumption has risen 16% over a 10 year period, lead emissions have fallen by 19%. This trend will continue as the level of lead in petrol will be further reduced to 0.15 g/l at the end of this year and lead free petrol will be on the market possibly from 1986 onward. Nitrogen oxides emissions, too, are estimated to have fallen by 12% since 1979, half this decrease being due to reductions in emissions from power stations.

A worrying freshwater pollution trend is the doubling, over the last 20 years, in the average concentration of nitrate in rivers. The biggest increases have been generally found in areas of intensive arable farming. In July 1985 the EEC Directive on the quality of water intended for human consumption comes into operation. This specifies a maximum admissible concentration of 50 mg/l as nitrate although this value may be temporarily exceeded provided there is no public health risk. Clearly this level is exceeded at at least one of the monitoring sites reported in the Digest, and unless the UK applies for and obtains a derogation, it will have to take steps to meet the EEC criteria. The largest individual input in all three monitored catchments is from fertilizer usage, which

must be the most obvious target for controls.

Overall we can derive some encouragement from some of the trends indicated by this report, but much more needs to be done particularly in the area of noise control (to which the Government seems to attach a remarkably low priority) and in relation to particular emissions such as hydrocarbons.

HOUSE OF LORDS CALL FOR RETENTION OF GREATER LONDON'S SCIENTIFIC SERVICES

The House of Lords Select Committee on Science and Technology issued an interim report (4th report, Session 1984-85) in April which recommended that a Central Laboratory Service should be retained in London. The Committee considered that certain of the services currently offered by the GLC Scientific Services Branch could not sensibly be divided amongst the London Boroughs individually. The Committee was particularly concerned to retain intact the services for chemical analysis, air and noise pollution monitoring and advice, waste services, fire protection and operational support, land survey, land reclamation and housing research.

In evidence to the Select Committee the National Society for Clean Air stressed the value to the community at large of the services offered by the Scientific Branch, and said *inter alia* that the air pollution and noise divisions should be retained in substantially their present form. The Society is delighted with the Select Committee's findings and is encouraged by the Government's initial

response to the report. Lord Elton, a junior Environment Minister, told the House of Lords in May that the GLC's Scientific Service Laboratories would not be divided up and handed over to the district Councils and Boroughs. Instead, they would be handled by the residuary bodies that would take over the undischarged functions of the Counties, following abolition. These bodies would have as part of their brief to ensure the future of "worthwhile centres of excellence".

POLLUTION CONTROL EQUIPMENT MANUFACTURERS MARKET REPORT

ICC Business Ratio Publications have just published the 3rd edition of their report on pollution control equipment manufacturers which describes the financial performance of 60 leading companies in the industry. The report, divided into 4 sections, contains a set of financial data and the resulting business ratios presented in tabular form. An introductory commentary gives the detailed overview of sector developments, then league tables rank companies' performance on up to 20 separate key management ratios. Companies are divided into two main groups: air and gas control equipment manufacturers, and those in the water pollution and sewage control field. Additional tables highlight the growth rate of companies and finally each company is profiled on a separate page.

Total sales of the companies in the report was £585 million in 1983/84, the majority of sales being in the water and sewage control sector. Companies in that sector achieved a profit margin of 6%. The company with the top sales growth rate, at 57%, was involved in the manu-

facture of pump and sewage control equipment. One interesting point is that air and gas flow equipment manufacturers managed to increase return on capital in each of the 3 years under study, with an average return on capital of 14.5%. The reverse was true for the water and sewage sector, mainly due to the poor performance of two large companies in the sewage sector.

The report concludes that there is significant room on the market for the services of the pollution control industry and that further legislative advances will provide the industry with a sizeable and expanding market both at home and overseas. The export performance of the various companies is good, and prospects are better: ICC calls the outlook "potentially quite exciting".

The report *Business Ratio Report — an industry sector analysis. Pollution control*, 3rd edition 1985, is published by ICC Business Ratios, 28 — 42 Banner Street, London EC1Y 8QE and costs £137.00.

CONCAWE'S 1984 ANNUAL REPORT

The oil companies' European organisation for environmental and health protection, CONCAWE, notes in their 1984 report that the increasing attention paid to environmental legislation by both European and National Parliament reflects strong public interest in the state of the environment.

From the oil-refining industry's viewpoint moves to reduce automobile emissions, including the introduction of unleaded petrol, are identified as the most import-

ant single aspect of recent environmental legislative proposals, but the draft Directive on air pollution from large combustion plant was also a priority issue.

CONCAWE made their own comments on all these proposals, putting forward the case for a single compulsory unleaded grade of petrol of octane number RON/MON = 94.5/84.5 at the Refinery. This figure was derived as the optimum from the Rational Use of Fuel in Transport (RUFIT) studies. In the end, the EEC agreed to a rounded up octane number of RON/MON = 95/85 at the pump and accepted the concept of the single mandatory grade structure.

The EEC Commission has also been considering a further proposal on the sulphur content of fuel — to lower the sulphur content of gas oils. CONCAWE argued that this would have a negligible effect on overall atmospheric sulphur emissions, at a sharply rising cost.

The large combustion plant Directive would have a considerable impact on the oil industry, with much refinery plant being affected. CONCAWE submitted that the proposed application of the Directive to plant of 50 MW or greater capacity should be revised upwards to 100 MW or above, on the grounds that this would allow for more cost-effective reporting and control of emissions. CONCAWE also argued that there was much more scope for cost effective control procedures than the pro-rata limit values suggested. For example, with multi-fuel firing in refineries the limit values imposed by the proposed Directive could result in a very large investment for emissions clean-up of a very small proportion of the fuel burnt, ie the fuel oil part.

CONCAWE suggested instead that the West German "Majority Fuel" concept should be adopted. This gives certain emission limit concessions to oil refinery furnaces burning refinery residues.

Refineries make a very low contribution to total anthropogenic NO_x emissions and CONCAWE consequently argued that expensive retrofitting of NO_x controls on refinery plant is not economically justified. CONCAWE also fell into line with most other industry by arguing against the inclusion of particulates in the Directive, saying that there is little evidence of particulates playing any role in acid precipitation.

The report, entitled *1984 Annual Report (CONCAWE — Report No. 3/85)*, is available from CONCAWE, Babylon-Kantoren A, Kroningin Julianaplein, 30-9 2595 AA Den Haag.

TRAINING FOR ENVIRONMENTAL IMPACT ASSESSMENT

With agreement finally reached on the EEC's Directive on Environmental Impact Assessment, the University of Manchester's Department of Town and Country Planning has published two timely papers on EIA methods and procedures and their training implications. These two occasional papers were originally prepared as supplementary reports for the Commission of the European Communities, part of a study on EIA Methods within the EEC. The *first, Occasional Paper 13*, by Lee, Wood and Gazidellis, entitled *Arrangements for Environmental Impact Assessment and their training implications in the European Communities and North America: Country Studies*, presents an up to date

account of the arrangements in all EEC Member States and in North America, as well as discussing training for EIA. The second, *Occasional Paper 14, A Guide to Training Materials for Environmental Impact Assessment* by Wood and Gazidellis, has chapters on EIA methods, laws and regulations' procedures, guidelines and guidance manuals, published EIA's, training needs and training provisions, and EIA case studies, together with an author index. All the main chapters contain annotated bibliographic references, and specific examples and illustrations which include material from EEC countries and the United States.

The two papers will be of particular interest to those who wish to obtain practical guidance in the preparation of individual EIA training courses and for people who want to familiarise themselves with the existing and proposed arrangements for EIA in the countries studied.

Prepaid orders should be addressed to: The Editor, Occasional Papers, Department of Town and Country Planning, University of Manchester, Manchester M13 9PL. Cheques should be made payable to: University of Manchester. The papers cost £4.00 each inclusive of post and packing. Airmail despatch is £5.00 extra. Both papers are thoroughly recommended as excellent value.

ENVIRONMENTAL POLLUTION CONTROL IN RELATION TO DEVELOPMENT

Developing countries must take steps to avoid the negative environmental and health effects of development, says a report by a WHO Expert Committee.

The 1985 report, "Environmental Pollution Control in Relation to Development", highlights various factors peculiar to developing countries which might intensify the health impacts of environmental pollutants, for example, the high incidence of pulmonary heart disease in women exposed to the fumes from firewood, dried animal dung or even kerosene burnt in their homes. Recent studies have revealed that the smoke generated by such fuels contains almost all the toxic substances found in smoke from fossil fuel combustion, but in concentrations far exceeding WHO guidelines. Dietary factors can also influence the toxicity of chemicals and the potential effect of environmental pollutants can also be affected by the high ambient temperature prevailing in many developing countries. In hot and humid conditions protective clothing in industry is uncomfortable to wear and this can increase the level of exposure to, and absorption of, toxic chemicals. Thus, the Expert Committee concludes that it is unrealistic to apply the TLVs used in highly industrialised countries to workers in many developing countries, and that this may also be true for standards relating to acceptable daily intake of pollutants by the general public.

As Dr K.M. Sullivan pointed out in his address to the 1984 Clean Air Conference in Brighton, many of the environmental problems in developing countries are related to population growth and consequent increased energy consumption. The rapid rate of urbanisation in many developing countries makes it especially necessary to plan carefully and develop correct remedial measures. Urban sanitation, housing and municipal refuse are systems likely to be heavily burdened but the Expert Committee

also chose to use automobile traffic as an illustration of the public health problems related to urban pollution.

In most large cities motor vehicles are responsible for a substantial proportion of the total quantity of pollutants discharged to the atmosphere. The effects of these emissions differ in the developing and developed cities because of different emission rates and the varying proportion of petrol- and diesel-powered vehicles. The report raises the question of whether the prevalence of dietary deficiencies in the inhabitants within developing countries might make them more susceptible to the effects of some of the pollutants associated with vehicle emissions: nitrogen dioxide, nitric oxide and hydrocarbons. Climatic differences are also obviously important in the context of the impact of traffic emissions.

The report correctly points out that no form of power generation can ever be completely free from health risks and that the best strategy is to encourage all governments to use energy efficiently and improve energy conservation. Referring to coal-fired power stations, the report dismisses the strategy of "tall stacks" as an unsatisfactory solution in view of the acid rain phenomenon in Europe and North America. It recommends that when new power stations are being designed, the installation of desulphurisation equipment should be considered. The Expert Committee concedes that the cost of such installations in older coal-fired power stations might be prohibitive.

In terms of laying down general policies and procedures, the report recommends that pollution control should be

thoroughly integrated into the socio-economic plan for the area or country under consideration. These pollution control plans, it says, should be comprehensive and should take advantage of modern techniques for environmental/health impact assessment. The effects from the environment of neighbouring countries should be considered — obviously WHO is keen to avoid a repetition of mistakes made in the developed world! Finally, the Expert Committee recommends that the public should be invited to participate since they might be able to draw attention to factors and values of particular local importance which might otherwise go unrecognised.

As to legislation, the Expert Committee advises that clear and consistent objectives should be evolved for the protection of water, air, soil and natural resources and incorporated into legislation. Environmental quality standards, it says, should be used to provide a background for defining emission standards as well as for specifying priority remedial activities, and obtaining assistance from international agencies. The Committee advocates a system of fiscal incentives and monetary penalties to "persuade" industry to comply with legislation. Both in the recommendations for legislation and in advice on the establishment of governmental institutions for pollution control, the Expert Group is aiming to improve on the systems now operating in many developed countries.

World Health Organization, Geneva (1985). Environmental pollution control in relation to development. Technical Report Series 718.

DIVISIONAL NEWS

NORTHERN DIVISION

Meeting held at Cramlington, Blyth Valley on 29 March 1985.

Forty nine members attended the spring meeting of the Northern Division and were welcomed by Cllr Mrs E.A. Black, Chairman of the Environmental Health and Control Committee, Borough of Blyth. Cllr Black said that it was an honour for Blyth Valley to host this meeting and particularly asked the members to take the opportunity of having a look round the facilities which the Concordia Leisure Centre had to offer.

She spoke of the work that authorities needed to do (indeed, that most were already doing) to achieve a better environment for the people of the area, and she assured us that Blyth Valley was not to be found wanting in this, or indeed, any other matter related to civic pride. The only regret that she had was that members were seeing a Northumberland shrouded in mist and snow, and not wearing its spring clothes.

The Civic Welcome and business meeting were followed by a talk on acid rain, given by Mr P.M. Owens, Scientific Adviser, CEEGB.

Mr Owens outlined the research work which had been undertaken on acid deposition and showed many interesting slides and charts in which the levels of acid in the atmosphere had been recorded, together with examples of damage ascribed to acid rain. His examples extended from local research into the effect on bird life in a Welsh river, to global references showing that the CEEGB is actively researching all aspects of what is recognised as a complex pollution problem, where simple causes have not been completely established.

After this most interesting talk there were many questions from the audience, on subjects such as the basis that the UK has used to determine its level, and the impact of low stack heights plus wet emission which may increase our own UK level of pollution and yet not make a significant improvement in Europe. This question was posed by Mr D. Clark, an Environmental Health Officer of Middlesbrough.

Mr L. Mair, private member, was concerned that the figures given were average values, and as such were not representative of the true damage that can be caused by acid deposition. He asked whether we had sufficient information on the peak measurement.

Mr D. Fogg of Allerdale was concerned to see that the levels in Europe compared with those in the southern hemisphere seemed to show a complete variance, and he wondered whether this was because the documentation in Europe had been carried out over a longer period of time than that in the southern hemisphere.

Mr A. Fisher, Chief Environmental Health Officer, Blyth Valley Council, proposed a vote of thanks to Mr Owens, stressing that it is only by attending such meetings that we can

possibly increase our understanding not only of the cause and effect of acid rain, but the work that organisations such as the CEEB are undertaking in this matter. He was quite certain that there is benefit to be obtained in situations where we are reacting to public pressure; in his view, public pressure often leads to, and can ultimately bring about, the resolving of problems such as this one. He then asked the members to show their appreciation to Mr. Owens in the usual manner.

*W.C.B. Robson
Hon. Secretary*

EAST MIDLANDS DIVISION

Report of a meeting held at Corby on 19 April 1985

More than sixty delegates gathered in the Civic Centre at Corby on the best spring day so far this year. Coffee and biscuits were provided on arrival by our hosts for the day, the Chairman and Members of the Corby District Council, and members mixed informally until the beginning of the proceedings at 10.30 a.m.

The Divisional Chairman, Mr J.E. Marsh, introduced the Chairman of the Corby District Council, Councillor J.J. Sims, who kindly extended a civic welcome to the delegates. Recalling that the Division last met in Corby three years ago, Cllr Sims said there was now more industry as a result of the successful redevelopment programme, but the Council were exercising strong control to protect the environment. Those who had known Corby in the past would note the comparison during the afternoon visits. Thanking Cllr Sims for his warm welcome Mr Marsh asked that the thanks of the Society be passed on to the Council, and paid tribute to the admirable progress made in Corby since the closure of the steel works.

Since Cllr Sims had to leave the meeting to attend other business, opportunity was taken at this point to recognise the long service of Mrs E.E. Stewart, now an individual member, but for many years a representative of the former Corby Urban District Council. On behalf of the Corby District Council, and also the Division, Cllr Sims presented Mrs Stewart with one of the Society's 50th anniversary paper weights. Mrs Stewart suitably responded.

Mr Marsh then introduced Dr D. Davies M.D. F.R.C.P., Consultant Physician in Thoracic Medicine at Nottingham City Hospital and a co-opted member of the Divisional Council of very long standing. Remarking that Dr Davies acted as our conscience in the matter of cigarette smoking, Mr Marsh said that he was respected in his field and was one of those who had foresight so far as air pollution was concerned. Mr Marsh produced a twenty year old press cutting reporting Dr Davies comments on the subject.

Speaking on "Exposure to Asbestos — The Medical Implications", Dr Davies said that there was controversy over many medical conditions, but few more so than those associated with asbestos. The situation gave rise to anxiety and to irrational actions. Asbestos was not one substance but a group of substances which could be spun, combed

and woven, which were resistant to heat and corrosion and had a very low electrical conductivity. Small amounts had been used for centuries and it was said that asbestos formed the wicks of the lamps of the vestal virgins in Rome. Use increased in the last part of the nineteenth century and continued to grow, peaking in the 1950s and 1960s. Since 1970 no blue asbestos had been imported.

Exposure came from mining, which took place mainly in Canada, S. Africa and Australia, and was superficial as opposed to deep mining. Transport also presented hazards as did processing, which in the UK took place mainly in London and East Yorkshire.

Making textiles had exposed people to a great deal of dust. Lagging had been a source of exposure together with fire proofing which had been a particular problem in shipbuilding. Asbestos could be mixed with cement to make pipes and roofing materials. It was also used in brake linings. It had been used in gas mask manufacture and in Nottingham during the last war some 1500 people, mainly women, had been exposed, and the effects were still being seen. In urban atmospheres there was always some exposure.

For practical purposes there were three types of asbestos, namely white, which had long curly fibres, the other two being brown and blue which had shorter fibres. Turning to the potential risk, Dr Davies quoted *The Times* of 2nd July, 1984 as saying that a single fibre could give rise to asbestos related disease, and said that this was as valid as saying that if you crossed the road only once in your lifetime you might be killed. Dr Davies then described, with the aid of slides, the five conditions to which exposure to asbestos might give rise. These were:

1. *Pleural plaques*

This condition affected the pleural covering of the lungs and the chest cavity but did not involve the lung itself. It could exist for 20 years before being detectable. It was not a certifiable condition.

2. *Diffuse Pleural Thickening*

This was a build up which stopped the lung expanding and could give rise to pain in the chest. It followed heavy exposure. From 1st April 1985 it was a certifiable condition if affecting both sides and causing disability. In some people it could cause shortness of breath.

2. *Asbestosis*

This usually affected the whole of both lungs causing shortness of breath and also shortening life. It could be caused by any type of asbestos but only occurred after heavy exposure. Since 1970 the incidence had reduced and it was unlikely that there would be any asbestosis in people first exposed since then. It was a certifiable condition.

4. *Cancer of the Lung*

This could develop after asbestosis. There were some 35,000 deaths per year from lung cancer, the major cause of which was cigarette smoking. The vast majority of deaths were due to that and that alone. Incidence was 1 in 8 for smokers and about 1 in 300 for non-smokers. If someone smoked and was also exposed to asbestos the

chances were 1 in 2 or 3. For non-smokers there was nothing like the risk. Evidence is that risk of lung cancer only increases when exposure to asbestos is sufficient to produce asbestosis or the person is at risk of asbestosis. All types of asbestos were believed to be involved but the cause may be restricted to the blue variety. The condition is classed as an industrial disease whether the patient is a smoker or not. Of the 35,000 people per year who died of lung cancer asbestos did not account for more than about 100.

5. *Mesothelioma*

This is a malignant disease affecting the pleura and sometimes the peritoneum. It is invariably fatal. All the evidence is that it is attributable only to the brown and the blue asbestos — and mainly the blue. Of the 1500 people mentioned earlier who had worked on the gas masks, 40 had died. The condition usually followed heavy or fairly heavy exposure, but sometimes the exposure might only be light.

Dr Davies was followed by Mr E. Davenport, H.M. Principal Inspector of Factories, who addressed the meeting on “Removal of Asbestos — licensing and practical considerations”. Mr. Davenport referred to the *Asbestos Licensing Regulations* of 1983 which had been issued following the *1st Report of the Advisory Council on Asbestos* in 1976 dealing with health risks to workers and the public. No specific precautions were laid down since these were covered by other legislation. The Regulations allowed for the licensing of Employers and Self Employed who carry out some of the most hazardous work. The Regulations were a code allowing enforcing authorities to monitor the management, training, supervision, equipment schedules and methods of stripping used by the firms in question. The regulations applied only to asbestos insulation and coatings. They could apply to a paint.

Mr Davenport discussed the conditions which could be attached to a licence. These could be altered from time to time, and, if circumstances required, the licence could be revoked. Provision was made for the medical monitoring of employees.

Turning to methods of removal, Mr Davenport reminded members of the *Approved Code of Practice* obtainable from HMSO and described the system of using three air locks. Operators should wear disposable underwear. When leaving the working area the operator enters the first air lock and vacuums himself using a cleaner with a special filter which is 99.997% efficient. He then goes to the second air lock and removes all clothing but keeps on the mask. The next procedure is to enter the third airlock and put on transit overalls. Wearing these he can leave the working area and go to the full decontamination unit. In the decontamination unit the operator will shower with the mask on — remove the mask and shower again. He can then pass into the clean chamber, put on outside clothing and leave the unit. This procedure must be followed every time an operator leaves the working area whatever the reason.

Following the two talks the speakers agreed to answer questions. An indication of the interest could be gained from the fact that the Chairman had to terminate the question time in order to keep to our timetable.

The morning session was followed by lunch taken in the Willow Room by kind invitation of the Chairman and Members of the Corby District Council. This was a most excellent meal in all respects and at the end of the lunch the Chairman, Mr J.E. Marsh, voiced the very warm thanks of the Division to the Corby District Council and their Officers for their hospitality and the arrangements for the proceedings for the day. Special thanks are due to Mr J. Sharnock, the Chief Environmental Health Officer, and Mr Peter Toombs, Senior Environmental Health Officer, who had been responsible for the detailed organisation.

Following the lunch Members went in three parties to visit industrial undertakings in Corby. These were British American Tobacco, E.P. Air Pollution Control Ltd., and Corby Aluminium. The Division is grateful to all these Companies for receiving the parties and enabling Members to see the various processes.

E.F. Raven
Hon. Secretary

The logo consists of the lowercase letters 'nsca' in a bold, sans-serif font, enclosed within a thin, horizontal oval border.

52nd CONFERENCE SCARBOROUGH 1985

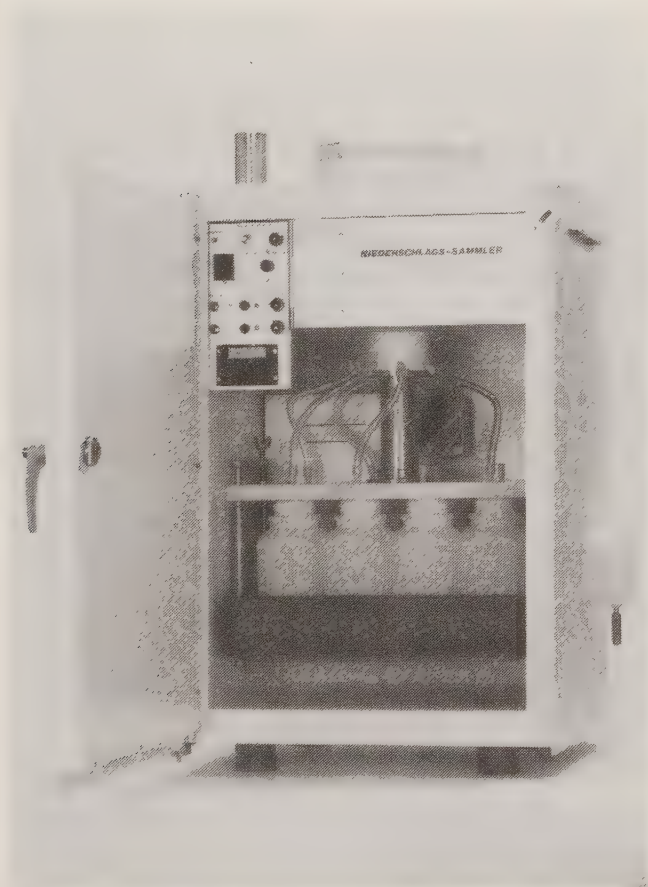
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INDUSTRIAL NEWS

Acid rain monitor from Hydro Systems

A 7 day Automatic Rainfall Collector designed particularly for monitoring acid rain and other rain borne pollutants has been manufactured by Walter Eigenbrodt of West Germany and is being distributed by Hydro Systems Ltd. of Harpenden, Herts.



The instrument incorporates an automatic funnel mechanism allowing the unit to be open only during precipitation. A new sample bottle is presented to the funnel every 24 hours, for each of 7 days. The unit incorporates wintertime heating and is manufactured from chemically inert materials.

Already orders have been received from

a U.K. Government Research Station and Universities.

Reader Enquiry Service No. **8512**

Oil-fired power station in Stockholm to be converted to coal using ASEA PFBC technology

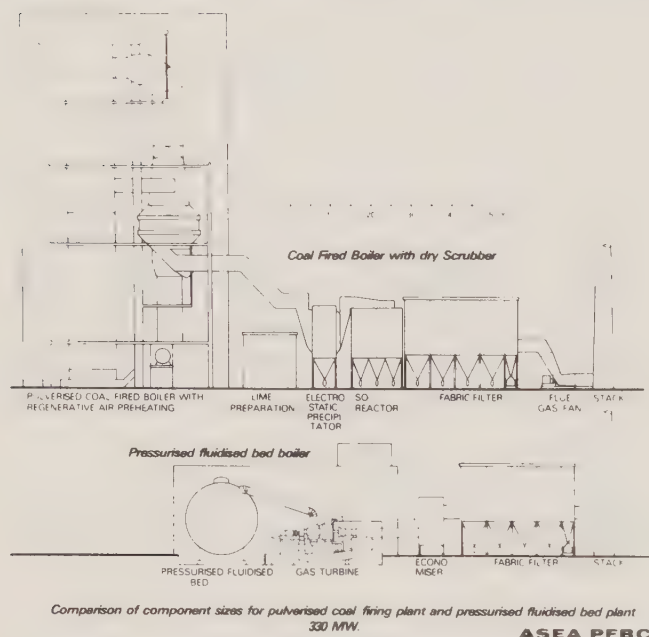
The Mayor of Stockholm and the Chairman of the Stockholm Energy Company announced on 12 April, 1985, that the Vartan co-generation plant in the centre of the city will be retrofitted by ASEA with two coal-fired PFBC (pressurised fluidised bed combustion) modules. They will deliver 131 MW of electricity and 215 MW of heat to the city of Stockholm. These units will be commissioned in 1989 and represent the first stage in converting the power plant from oil to coal.

Stockholm Energy Company has, in collaboration with the Swedish State Power Board, thoroughly evaluated different energy-supply alternatives for Stockholm. The results of their evaluation showed that the PFBC technology was by far the best alternative for satisfying the key requirements for supplying energy to the Swedish capital.

Significant areas in the evaluation were:

1. Reducing the costs of district-heating in the city of Stockholm.
2. Improving Stockholm's already low level of atmospheric pollution.
3. Public acceptance — designing a coal-fired power plant for operation in a densely-populated residential area.
4. Avoiding changes in the existing picturesque skyline of the city.

PFBC was chosen as the best available technology because of its economy, efficiency and outstanding ecological performance. The low NO_x and sulphur emission from the PFBC plant, together with its high efficiency and compact, low-profile design and environmental advantages, met the requirements. Sulphur emission will be reduced by 80% compared with the existing oil-fired plant, and NO_x reduced by 50%.



Reader Enquiry Service No. **8513**

New sound meter from Racal Safety

A new light weight hand-held industrial sound level meter, the RSL7, announced today by Racal Safety of Wembley, is the latest addition to the company's extensive range of hearing protection equipment.

Sound levels between 40 and 140 decibels (dB) can be measured on a linear meter scale. Push button range selection and an LED display make it an easy-to-use portable device.

A colour display enables the maximum exposure time for any value between 90

and 110 dBA to be ascertained, and allows the RSL 7 to measure varying noise limits found in different countries and industries which have their own regulations.

Measurements can be made in 'A' or 'Linear' modes with SLOW/FAST or PEAK meter response times with a hold button enabling the maximum r.m.s. or peak value of any event to be held on the meter display.

Reader Enquiry Service No. **8514**

Sweet smell of success

Exhaust gases from a barley roasting operation at the Guinness brewery in Park Royal, London, are now treated more effectively thanks to a Metal Box thermal oxidiser — believed to be the first in use at a brewery throughout the world.

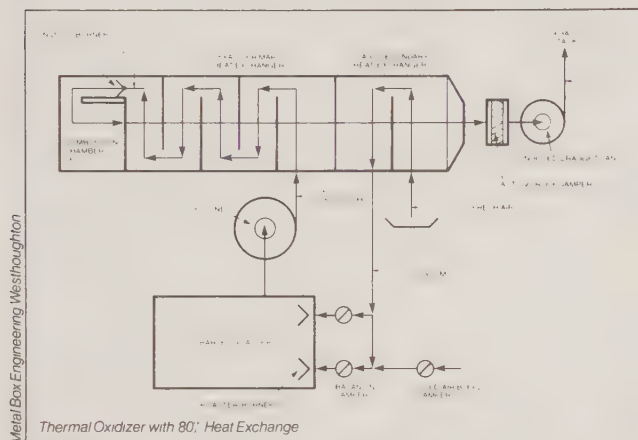
Although non-toxic, the pungent gases from the barley roasting process can be objectionable to some people and the oxidiser, installed in January, has been more effective in destroying them than the catalytic system used previously.

The new pollution control equipment also consumes 40 per cent less energy than the catalytic system. An additional benefit is a further 10 per cent energy saving on the roasting operation due to the incorporation of a secondary heat recovery system to the fresh air intakes at the roaster burner boxes.

Tailor-made for the brewery, the thermal oxidiser was built by Metal Box Engineering at its Westhoughton factory near Bolton, under licence from Smith Environmental Corporation of California

who have already supplied over 2,000 similar systems in the U.S.A.

The unit is designed to incinerate 3,500 standard cubic feet per minute of exhaust fumes from the roaster at a temperature of 760°C. The waste gases enter the Metal Box system at 150°C via a cyclone which removes the larger dust particles.

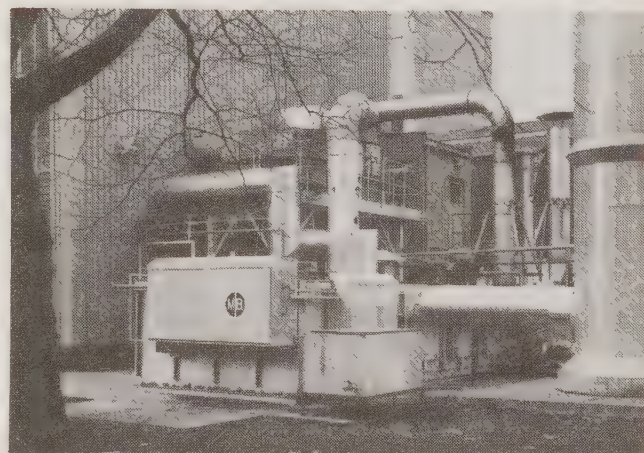


On entering the oxidiser, polluted gas is pre-heated in a five-pass shell and tube heat exchanger from 150°C to 630°C. It then passes through an in-duct gas burner which raises the temperature up to 760°C before the gas enters a combustion chamber sized to hold it at this temperature for at least half a second. A feature of the design is the thorough mixing of gases which takes place at the burner and the turbulence created within the combustion chamber — a critical factor in effective pollution control systems.

After leaving the combustion chamber, the hot clean air is used to pre-heat the incoming polluted gas by being drawn over the outside of the heat exchanger tubes while the polluted gas is pulled through the inside of the tubes. Hot clean air leaves the primary heat exchanger at 290°C and enters a secondary heat exchanger designed to pre-heat ambient clean air before it is passed back into the roasting process to replace the air taken out by the exhaust. About 1,000

standard cubic feet per minute of ambient clean air is raised from 20°C to 250°C in the secondary heat exchanger.

A special feature of the Metal Box design is the use of an exhaust fan on the end of the system, making the oxidiser operate under negative pressure. This means the unit can be fitted with explosion relief doors which double up as an access for cleaning purposes. The fan is on the clean side of the unit where only completely burnt ash passes through and no build-up problems occur on the impeller.



An additional bonus is that the thermal oxidiser is proving to be virtually self-cleaning.

Reader Enquiry Service No. **8515**

Low NOx combustion

Techniques for controlling emissions of known pollutants such as oxides of nitrogen and sulphur (NOx, SOx) etc vary considerably but one particular new technique now being developed is by lowering the intensity of combustion flame temperature.

Recent work carried out by University College, Cardiff (UCC) and sponsored by National Smokeless Fuels (NSF) has been

directed at combusting low calorific value gases. Two ranges of combustor are being marketed by the External Engineering Services group of NCB (Coal Products) Limited, NSF's parent company. Both types of combustor have shown the capability of producing ultra low NO_x emissions. One type of combustor, the "Swirl", has performed very well in combusting low C.V. waste gas and is being tested for its performance with various toxic ingredients in the gas. The other type is a multi-port cyclone combustor built as a stage between a combustor for low C.V. gas containing particulates and the continuing development towards a solid fuel combustor incorporating ash removal.

Performance testing of the Multi-port Cyclone Combustor was carried out with diluted natural gas (to provide low C.V. gas). During testing it was found that low NO_x emissions were characteristic under certain controlled conditions.

The conditions producing low NO_x emissions resulted in a flame front temperature of about 1100°C and may therefore have applications for heating, drying, or some mineral processing. In the tests NO₂ emissions were virtually eliminated, which is particularly important in the food industries and for direct fired heaters. The developments have been carried out using natural gas but it has been shown that gas oil can be combusted with excellent low NO_x emissions.

Both designs of combustor fit in to the natural family of "Swirl", "Cyclone" and "Vortex" concepts currently being designed and marketed by EES for their range of cyclone separators (VCP), and combustors. They are suitable for low C.V. gas (40 Btu per cu ft), particulate

laden gas, solid fuels and wastes, toxic incineration, and now low NO_x combustion.

Enquiries for the various combustion services or for applications involving the low NO_x Combustor should be made to: Ted Gill, Manager, External Engineering Services, NCB (Coal Products) Limited, P.O. Box 16, Wingerworth, Chesterfield S42 6JT. Telephone: (0246) 77001.

David Shillito joins Board of Cremer and Warner

David E. Shillito, CEng, FICHEME, FInstE, FRMetS, has joined the Board of Consulting Engineers Cremer and Warner, where he will take over responsibility for the Environmental activities of the Consultancy. David Shillito has worked for Cremer and Warner for 16 years and has been an Associate Director since 1981. He has been responsible for many of the company's major contracts in environmental protection and occupational safety, and is deeply involved in major hazards assessments. He has authored some 20 publications, books, reports and papers on air pollution, materials handling, dust control and nuisance.

Correction

Page 17 of the last issue (*Clean Air* Vol. 15, No. 1) contained a list of local authorities which responded to the NSCA's survey on straw and stubble burning in 1984. Dover District Council was erroneously shown as supporting a ban. Dacorum DC, which supports a ban, was accidentally omitted from the list.

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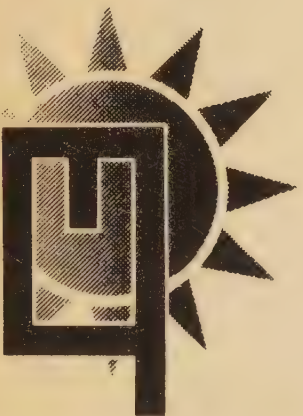
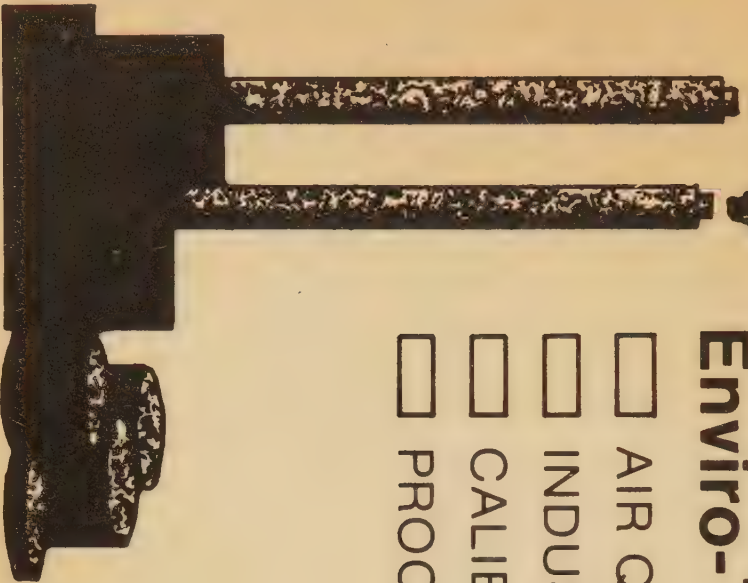
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CLEAN

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VOL.15 NO.3

AIR





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CLEAN AIR

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RESTORING PUBLIC CONFIDENCE

The promotion of William Waldegrave to Minister of State at the DOE, while retaining his brief for environmental matters, will be welcomed by all who believe that the Department should fight doughtily for the health and well-being of the environment, against all the blows and checks that Treasury and other government departments can deal. Indeed, the weeks ahead are set for a resurgence in DOE initiative. The long awaited consultation paper on clean air legislation is on the brink of being issued, while the idea of a unified pollution inspectorate has resurfaced. These are welcome signs of a fundamental reappraisal of environmental policy making, which at present lacks credibility. The NSCA believes that the first step is to move the Industrial Air Pollution Inspectorate from HSE to DOE. The Inspectorate will then be able to feed its technical policy advice direct from within DOE's own environmental management unit, thus helping both to stimulate and formulate strategic policy making. It is high time that the Department of the Environment should be seen to bear full responsibility for air pollution management. The present arrangement, with the IAPI becoming ever more firmly embedded within HSE, can only weaken public confidence in the control of air pollution: after all, industry (between the CBI and the TUC) effectively governs HSE through its overwhelming representation on the Health and Safety Commission.

IUAPPA NEWSLETTER

As an experiment we are enclosing with this issue a copy of the August edition of the *IUAPPA Newsletter*. The Newsletter is published bi-monthly and circulated to the 28 countries represented by members of IUAPPA. Most of the member associations print the IUAPPA Newsletter in whole or in part in their own journals. This has been our practice in *Clean Air*, which carries extracts under the heading "International News". So that all readers of *Clean Air*, and particularly members of the NSCA, can get the full flavour of the Newsletter we have decided on this trial insert. We should welcome your views on whether the Newsletter should regularly accompany *Clean Air*. We should also like to take this opportunity to draw attention to the 7th World Clean Air Congress being organised by the Australian/New Zealand Clean Air Association, which will be held in Sydney, Australia from 25 to 29 August 1986. IUAPPA Congresses are unique events, bringing together experts in air pollution control from countries all over the world and enabling an extraordinary range of research and experience to be presented among the hundreds of papers and posters discussed over the five days of Congress.

ACID RAIN
NSCA Policy Statement
September 1985

The NSCA has given long and detailed consideration to the science and politics of acid rain. The Society's policy statement on the subject was last revised in July 1984. Since then, the Technical Committee's Acid Rain Sub Group has met on four occasions under two able chairmen: Professor Richard Scorer, then Dr. Ron Barnes, the current chairman. The full Technical Committee, chaired by Mr. W.F. Snow, afforded the statement first an interim debate, then detailed discussion at an extraordinary meeting, during which the policy line was resolved. At its meeting on 5 September, the NSCA's Council endorsed the Technical Committee's draft with just two minor amendments. The following is thus the agreed NSCA policy on the still highly contentious subject of acid rain. Clearly, no such statement can be regarded as the Society's last word on the subject. It will require regular updating as advances are made in the scientific understanding of acid deposition and its effects.

The phrase "Acid Rain" is often misapplied and misunderstood, but it has passed into such wide and popular usage that it has become almost a synonym for "air pollution". A more accurate term is acid deposition. This covers acid rain, snow and hail, as well as scavenging by surface features (hills, trees) from mist and low cloud. In addition an important process of absorption by surface features such as buildings, soils, crops etc., called dry deposition, operates in the absence of precipitation.

The term "acid rain" is misleading in another respect since rain is already acid due to natural emissions, but may become more so due to an additional burden of man-made emissions.

It is important to distinguish between primary pollutants (harmful as emitted) and secondary pollutants (created out of primary pollutants after reactions in the atmosphere). We consider the following pollutants to be of particular significance in relation to acid deposition:

<i>Primary pollutants</i> (leading to)	<i>Secondary pollutants</i>	
sulphur oxides (SOx)	sulphate	(SO ₄)
¹ nitrogen oxides (NOx)	nitrogen dioxide	(NO ₂)
	nitrate	(NO ₃)
hydrocarbons (HCs)	ozone	(O ₃)

¹ mainly nitric oxide (NO) and a smaller percentage of NO₂

The effects which are of principal concern are:

- damage to buildings and materials
- damage to freshwater aquatic life
- damage to vegetation: trees in particular.

Looking at these effects in turn, the NSCA's views are as follows:

Damage to buildings and materials

One cause of damage to buildings and other structures, monuments and materials is SO₂ and its acidic derivatives, but the weather, particulates and CO₂ all play a part; NO_x may also be involved. This form of damage has occurred for centuries, was accelerated by industrialisation and is recognised throughout Britain and Europe. In terms of pollutant damage the local, especially low level emissions, are probably most important. Concentrations of SO₂ and other pollutants in major urban areas have fallen in recent years. Whether or not this has resulted in a reduction in building/materials damage is uncertain; work being carried out by the Building Research Establishment may provide the answer.

Damage to freshwater aquatic life

The ecological effect of freshwater acidification is seen as a reduction in diversity and populations of all freshwater species. In Norway damage has occurred in lakes and rivers in about 7% of the total area of the country, mainly in southern Norway. In Sweden 20% of the total number of lakes and rivers have now been affected. It appears that a small number of poorly buffered catchments in the UK are affected in the same way as those in Scandinavia.

The effect on freshwater aquatic life is determined by the acidification of the waters. Both the magnitude of the deposition and the chemical interactions which take place in the soil and watercourses after deposition have to be considered.

In Scandinavia, large parts of which are covered by shallow, often acid soils, capacity to neutralise deposited acidity is rather limited. The situation is exacerbated in spring and autumn when "flushes" of particularly acid run-off tend to occur. During spring, acid impurities in the winter snowpack are released in a higher concentration in the initial melt; this water flow, with its higher acid content, is not absorbed by the still-frozen land and so surges into the watercourse with harmful results. During long summer droughts, dry deposited and other acidic material accumulates in the soil and upon vegetation. The first autumn rains flush this material into the poorly buffered watercourses.

Modern forestry practices which involve drainage, clear felling and the cultivation of non-native, fast growing species contribute extensively to freshwater acidification. Nutrients are exported from the catchment area and acid litter accumulates more quickly than would occur naturally.

Although not the only source of sulphate and nitrate deposition in the affected parts of Scandinavia, the 2% of UK emissions which are deposited in Norway represent 17% of total sulphur deposition. This is the largest identified contribution. In Sweden, UK sources are responsible for the 3rd highest identified component of total atmospheric sulphur deposition, after Sweden herself and the German Democratic Republic. The situation with regard to nitrate is not clear and warrants further investigation.

Damage to trees

Damage to trees in forested areas in continental Europe and elsewhere is apparent, but the cause or causes of the damage are uncertain. Air pollution has been suggested as a factor and ozone and acid deposition are possible candidates, but it is clear that forestry methods are an important component and attention is also being paid to factors such as drought and frost. These stresses are now thought to act by way of creating a mineral imbalance in the tree.

Whether or not air pollution is a major culprit, the UK contribution where damage has been observed in central Europe is unlikely to be more than marginal. The first step in tackling the problems identified or suspected as resulting from air pollution must be to control sources closest to the area of impact, and the major polluting sources within transboundary reach of the forests.

It has been suggested that UK forests are also at risk, although a recent selective survey by the Forestry Commission did not confirm the presence of damage similar to that found in continental Europe.

Visibility reduction

This has received insufficient attention to date in the UK. It is a widespread and well understood consequence of air pollutants and operates in addition to visibility reduction caused by larger particulate matter and natural sources. The impairment in visibility is caused primarily by sulphate aerosols and to a lesser extent by nitrate aerosols. Sulphate particles are highly efficient at scattering visible light and produce a haze which often reduces visibility over wide areas of England, especially in the summer. The haze is particularly associated with days with strong photochemical activity, when sulphur dioxide is more readily oxidised to sulphate aerosol. Photochemical activity, which also produces high ozone levels, is related to hydrocarbons and nitrogen oxides emissions.

LEGISLATIVE CONTROL MEASURES

In the UK, control of air pollution from industrial plant is divided between local authorities, exercising powers under the Clean Air Acts, and the central agency, the Industrial Air Pollution Inspectorate (IAPI). The IAPI enforces relevant sections of the Alkali Acts and the Health and Safety at Work Act 1974. Its main requirement is that the industries it controls (which include power stations, chemical works, oil refineries etc) must use the "best practicable means" to prevent the discharge of noxious or offensive

gases, and if they are discharged, to render them harmless and inoffensive. To quote the Chief IAPI Annual Report, 1982, "The Act does not offer alternative approaches to control based on (*either*) prevention *or* dispersion; reliance on dispersion alone is only permitted when there are no practicable methods of preventing emissions". Tall stacks date from a period when control technology for SO₂ was not "practicable" within the meaning of the Act and are designed to render emissions "harmless and inoffensive". Today, technologies are available to reduce substantially SO₂ emissions from large combustion sources and with an increased cost to the consumer, in the case of electricity, of 5%. (This figure was given in evidence to the House of Commons Environment Committee by the CEEB, and it refers to a specific study for a 60% reduction in CEEB SO₂ emissions.) Techniques are also available to reduce NO_x emissions; these are now being explored in the UK.

Under EEC directives, the UK must comply with air quality standards for smoke, SO₂ and NO₂. The Commission of the European Communities has proposed measures which would reduce, progressively, national emissions of sulphur and nitrogen oxides (and dust) beyond their totals in 1980. At present the UK is the largest single emitter of SO₂ (27% of total) and possibly the second largest emitter of NO_x in the EEC.

Many of the EEC States and other countries have undertaken to reduce their SO₂ emissions to 30% below their 1980 level by 1993 (or 1995 in the case of Italy). The UK has given no such formal undertaking. Instead, it has announced its intention (without commitment) to achieve a 30% reduction in both SO₂ and NO_x by the late 1990s. UK SO₂ emissions are now 25% below their 1980 level, and 43% below the peak level of emissions in 1970. NO_x emissions are currently 7% below their 1980 level and 12% below their 1979 peak. The UK Government has stated that it "does not intend to commit the country to expensive emission controls, especially when there is uncertainty about the environmental benefits to be achieved in this country and in continental Europe".

This policy line seems to run counter to the principle, established in this country for many years, that the best practicable means should be used to prevent emissions of noxious or offensive gases, even though environmental benefits may not be clearly recognisable.

THE SOCIETY'S POSITION

The National Society for Clean Air, which exists to further the cause of clean air and urge responsible action by Government on behalf of the environment, believes that the UK cannot ignore the impact of its emissions at home or abroad and believes that existing legislation is not being as vigorously enforced as it might be.

Despite some uncertainties regarding effects of acid deposition, the Society recommends that action should be taken to maintain the downward trend in UK emissions of sulphur and nitrogen oxides, believing positive measures to be fundamental to meeting the intentions of the UK's own legislation and its international commitments.

Action to further reduce stationary source emissions could include:

- combined cycle plant using an integrated coal gasifier
- combined heat and power (CHP)
- energy conservation
- flue gas desulphurisation (fgd)
- fluidised bed combustion (fbc)
- low NO_x burners
- non-fossil fuel power generation
- pressurised fluidised bed combustion (pfbc).

Research and development should continue to the point where this range of options is fully open for adoption in a safe and practicable way in the UK, so that use of appropriate technology does not go by default.

In saying this, the Society wishes to emphasise that different approaches are required to achieve, on the one hand, local benefits within the UK (e.g. reduced corrosion of buildings and materials) and on the other hand, reductions in total emissions and hence improvement in visibility and reduced damage to ecosystems remote from the source of pollution.

Overall, benefits within the UK itself would be maximised by reducing low level emissions, although reductions from other sources (including tall stack emissions) would also help.

Sulphur deposition at long range would be reduced most cost-effectively by tackling large (> 100 MW) sources first. In addition, these are small in number compared with sources emitting at low level, and are responsible for about 75% of total SO₂ emissions. Since the problem of acid deposition is a function of various emissions from many sources in many countries, the solutions have to be found in the context of international action. Looking at Europe as a whole, a large proportion of emissions comes from Eastern Europe. Therefore, in addition to EEC initiatives and further measures taken by individual Member States, the problem needs to be tackled in a wider context which will include Eastern Bloc countries. The UN ECE Convention would seem to provide the mechanism for such action, but the good intentions should be translated into action.

As to mobile sources, further reductions in road vehicle emissions have just been agreed by EEC Ministers. The Society expects Her Majesty's Government to implement them in full.

Further copies of the above NSCA statement on acid rain are available on request from: Jane Dunmore, NSCA, 136 North Street, Brighton, Tel: (0273) 26313. The Society's leaflet, "Acid Rain", will be revised in line with this policy statement when it is next reprinted. A bibliography of titles on acid deposition/acid rain, held in the NSCA library, is also available from the Information Department.

ACID SURVEYS

Forest Health and Air Pollution — 1984 Forestry Commission Survey

Early in 1984 the Forestry Commission established a survey designed to check the effects, if any, of air pollution on UK forests. The survey is based on a network of stands and involves observation, over a series of years, of internationally agreed features such as needle loss (or crown density) and needle yellowing.

The main aim of the survey was to find out whether there is any evidence of the new type of forest decline among the commercially important crops of conifers in Britain. The results for 1984 are clearly in the negative, but the Forestry Commission researchers, headed by Dr. W.O. Binns, are only cautiously reassuring. They say that a single survey does little more than set up a datum — a point of reference. Direct comparison with similar surveys in Germany and elsewhere is difficult because of the great differences in altitude, climate, forestry management and in particular the age of the trees. In West Germany trees are classified according to whether they are over or under 60 years of age; but most British trees are cropped before they reach that age.

The survey covered Sitka spruce, Norway spruce and Scots pine. Broadleaved trees were excluded because damage always seems to appear first on conifers, although this year the Forestry Commission are conducting a separate survey of beech trees.

In order to ensure continuity over the period of the extended survey, trees aged between 30 and 45 years were chosen. Instead of surveying on 4 x 4 km grid squares, as is done in Germany, the Forestry Commission divided the country into areas above and below 244 metres, land receiving more or less than 1000 mm average annual rainfall, and ground with high and low sulphur deposition. The survey design was assisted by Dr. Hartmann of the Lower Saxony Forest Research Institute in Federal Republic of Germany, who advised use of the technique evolved by the Germans for young crops, i.e. assessing them from the margins of the stand, because the relative youth and evenage of British stands makes crown observations from within almost impossible.

Dr. Hartmann warned the Forestry Commission team that assessment of Scots pine would present difficulties. It seldom carries more than 3 years' needles and has a more open crown than spruce, which makes it more difficult to establish a norm, or departure from a normal full crown. Various other climatological and fungal attacks common in Britain also make the situation with Scots pine look more alarming than it really is. The survey report says that conditions found are familiar and should not give rise to concern: no new symptoms were reported.

As to needle yellowing, commonly found among West German spruce forests, this was not detected to any unusual degree in Britain. The report concludes that any stand found in less than perfect health could be accounted for without evoking pollution damage. "Nevertheless, only repeated surveys will show whether Britain has indeed escaped the blight which has descended on the forests of central Europe".

Forestry Commission Research and Development Paper 142, "Forest Health and Air Pollution – 1984 Survey", by W.O. Binns, D.B. Redfern, K. Rennolls and A.J.A. Betts.

FOE Surveys Acid Rain Damage to Trees

Friends of the Earth (FOE) have launched a national survey of acid rain damage to native British trees. The survey, funded by an £8,000 grant from the UK World Wildlife Fund, concentrates on die-back in yew and beech trees. Swedish Forest Ecologist Dr. Bengt Nihlgård, brought over to England to study British woods and trees, observed that many showed the same signs of air pollution damage as had appeared in European trees.

FOE have chosen yew as being the British equivalent of the native spruce in European forests. It is ecologically similar to beech and both are long-established native species, tolerant of the British climate. FOE believe that the Forestry Commission's survey, which found no extraordinary damage in relatively young forestry plantations, overlooks widespread die-back in the older native trees, such as yew and beech, in British woods and hedgerows.

FOE's spokesman, Chris Rose, said: "Until you know what to look for, damage is ignored, missed or put down to other causes, but it is wrong to try and disentangle natural and pollution stresses – in real life they act together."

The survey relies on volunteers completing record sheets, which are contained in a "tree die-back survey" action guide pack. 3,000 of these packs are being distributed, and while FOE do not assume that their survey will answer all the questions regarding acid rain and tree die-back, they hope it will go some way to forming a useful beginning. Results are expected to be published in October.

WATCH "Acid Drops" Survey

Another acid rain survey which relied on volunteers to supply data was the "Watch Acid Drops Survey" carried out between January 14 and February 10 1985. In this project, thousands of children all over the UK recorded the acidity of rain and snow from winter storms in their own back gardens. The aim was to collect, for the first time, detailed information about regional differences in acid rainfall. This was done as different weather fronts crossed the country. Results are being analysed by Dr. Neil Cape at the Institute of Terrestrial Ecology.

The survey showed that acid rain in Britain is strongly affected by weather patterns and wind direction and strength. With recording stations all over the UK, the project co-ordinators were able to collect enough records to show, in some detail, the effects of wind direction on acidity levels. Dr. Neil Cape said, "What we expected to happen was being confirmed by what people measured in their back gardens. They proved our gut feeling for what goes on: that warm, wet westerlies coming from the Atlantic are clean, while air masses associated with continental Europe or sources of industrial emissions

are relatively dirty." Some of the "Acid Drops" results might tie in with reports of unusually high levels of acidity in snow falling on East Norway last winter. That pollution was thought to have come from Central Europe. Further, the "Acid Drops" survey showed that large amounts of quite acid rain do fall on Britain, particularly when winds are from the east. The project could not reveal how much of this pollution came from sources within Britain.

"Acid Drops" was a pilot project and it is planned to follow it up with an even larger survey looking at other aspects of acid pollution and involving young people's environmental clubs on the Continent. It is hoped to put right the various problems which occurred during the first survey — such as the relative insensitivity of the measuring sticks at the lower end of the scale. The next project will also involve a survey of lichens.

Acid Rain and London

The GLC Scientific Services Branch have published an excellent report on the effects of acid deposition in our capital city. *Acid Rain and London*, by Dr. Duncan P.H. Laxen and Dr. Michael J.R. Schwar, states that air pollution is still eroding buildings in London and that the rapid decay of historic buildings in particular is a cause for concern. Reports of cost estimates indicate damage running at millions of pounds a year to buildings such as St. Pauls, Wren's churches and the Houses of Parliament (just completing a £10 million restoration).

The report also points to damage to plants caused by air pollution. This damage is likely to have occurred over many years, say the authors, and was probably especially associated with the high sulphur dioxide and smoke levels of the past. However, high levels of ozone found on occasions in London during most summers are also likely to cause damage to certain sensitive plants.

The report aims to give Londoners a fuller understanding of acid rain, described as "air pollution which increases the acidity of the environment". It also attempts to clarify other aspects of air pollution from a London perspective, and readers elsewhere in the UK will benefit from the explanation. There is an interesting section on recent developments in air quality management in London, which refers to the concern, held by the NSCA and other organisations, that high sulphur fuels are still being used in many parts of London, since London Boroughs were prevented from following the example set by the City of London which established a 1% limit on sulphur in fuel oil under its 1972 Various Powers Act. The report provides more evidence (if any still require it) of the excellence of the research work undertaken by the Scientific Services Branch, and their ability to convey information in an attractive and comprehensible manner for the benefit of the community at large.

The Report, "Hazardous Waste Management: An Overview" is available from the Hazardous Waste Inspectorate, Room A5.38, Romney House, 43 Marsham Street, London SW1P 3PY

DIVISIONAL NEWS

NORTH WEST DIVISION

Report of a Meeting of the Division, held Tuesday 18 June at Haydock Park Racecourse, St. Helens

112 delegates paid £10.00 each to attend a one day seminar on Acid Rain organised by the North West Division in June. The venue was the handsomely appointed Haydock Park Racecourse's Horseshoe Suite, which at lunchtime gave delegates a view, uninterrupted by horses and racegoers, across to Fiddlers Ferry Power Station in the distance.

The object of the day was to update the audience on the current scientific and technological developments in acid rain research and control. The scene was set in a comprehensive and well illustrated presentation by Mike Gittins of Leeds City Council. Mike argued for a more environmentally and politically sensitive stance to be taken by HM Government in response to international concern about forestry and lake damage, and the more parochial worries about materials damage in the UK.

The next speaker, Dr. Peter Lucas of Lancaster University, looked in particular at one aspect of the subject under research at present — the effect on plant life of air pollutants in combination. He presented the results of studies carried out in controlled conditions by Lancaster University, showing that at relatively low levels the combined effect of NO₂ and SO₂ was to drastically disrupt growth in plants.

By this stage in the day, it was necessary to redress the balance somewhat and Mike Turnbull of the Department of the Environment gave a masterly summary of Government policy on acid rain, stressing the reductions in SO₂ emissions that have already taken place (about 25% since the base date of 1980). He referred to the negotiations still underway within the UN ECE Convention on Long Range Transboundary Air Pollution and to the Government's decision to hold off from any immediate further commitment to cutting emissions. The UK Government's aim, unlike some other signatories to the Convention, was to achieve 30% reductions in both SO₂ and NO_x by the end of the 1990s.

Del Rowlands of the CEGB's North West Region gave a fascinating account of the state of the art of control technologies for sulphur dioxide and nitrogen oxides. His well-illustrated talk concentrated on the potential operating problems faced by the CEGB in introducing desulphurisation plant to existing power stations.

Finally, Jane Dunmore of the NSCA staff outlined the NSCA policy on acid deposition.

The success of the day was due in large measure to the superb and tireless organisation by the division's Hon. Secretary, Brian Douglas, and the able chairmanship of the Division's Chairman, Mr. F.W. Higson. The Society's Chairman, Mr. Max Beaumont, who had been specially invited to attend the Seminar, closed the day with his personal observations on the proceedings.

NORTHERN DIVISION

Annual General Meeting

Sands Leisure Centre, City of Carlisle — Friday 19th July, 1985

59 members attended the meeting, representing most of the authorities in the Northern Division; also present were Mr. Max Beaumont, Chairman of the Society, and Air Commodore J. Langston, Secretary General.

The meeting was opened by Councillor K. Aitken, Mayor of the City of Carlisle, who welcomed delegates to the Leisure Centre of which he and the City were justifiably proud. In welcoming the members he urged them not to rest on their laurels thinking that their work in clearing the environment had been completed; he knew that was not so, since we now face problems from the invisible pollutants discharged into the atmosphere, arising from exhaust gases and in particular the motor car. Cllr. Aitken stressed the importance of continuing a monitoring programme and undertaking research to ensure that the environment was not destroyed through such invisible gaseous pollutants. Councillor L. Poole, Chairman of the Northern Division, thanked the Mayor warmly for his welcoming address. Mr. Beaumont and J. Langston addressed the meeting, giving a most informative resume of the work that the Society is doing at national and international level, and assuring the members that their contribution to the work of the Society was most appreciated and, indeed, was the strength that enabled headquarters staff to tackle all the problems that they were called upon to deal with in the course of their daily work.

The Secretary's Annual Report was accepted by the meeting as was the financial report, which had indicated a satisfactory state of affairs.

Councillor L. Poole, B.E.M., in his Chairman's address expressed his appreciation of the support that members gave to the divisional meetings, coupled with the courtesy that some members extended in sending apologies for inability to attend. The meeting closed for lunch and in the afternoon a talk was given by three members of British Nuclear Fuels plc regarding the work undertaken by the Sellafield complex. This was a first class presentation by Mr. P. Graham, Mr. P. Smith and Dr. A. Lawson, and the talk was amply illustrated. Questions to the speakers related to the natural concern for the environment, the health of employees and people residing in the area, and the potential effect that the process could have on local agriculture and marine life. Mr. B. Davison, Director of Environmental Health City of Carlisle, proposed a vote of thanks to the speakers.

W.C.B. Robson
Hon. Secretary

ENVIRONMENTAL HEALTH OFFICERS' REPORT

The 1983/4 report of the Institution of Environmental Health Officers paints a gloomy picture of the effects of cutbacks in public expenditure on local government's pollution control work. The report charts rising numbers of public complaints about noise and

agricultural pollution, together with more contraventions of clean air legislation by industry, at a time when financial restraints have caused various local air pollution control programmes be halted.

The Institution expresses concern that the abandonment of the Noise Advisory Council and Clean Air Council has done more harm than good to the cause of effective environmental control. Looking specifically at smoke control, the report notes that finance for the implementation of new programmes has sometimes been lost in the general allocation for housing improvement programmes. The report is also critical of the muddled situation regarding "exempted appliances", while others that are technically just as capable of burning various fuels without (much!) smoke, are not approved for use in smoke control areas. The report notes that 10 years have elapsed since the publication of the 2nd Working Party on Grit and Dust Emissions, yet regulations setting emission standards for incinerators etc have still to be produced. More positively, the IEHO calls for in-the-open burning of tyres, insulated cable and similar material to become an absolute offence. When devious businessmen burn at night, it is very difficult to prove that the smoke emitted is black!

Dealing with acid rain, the report appears critical of the reticence of the environmental health profession on this issue but states, "it would appear that there is a clear relationship between acid deposition and adverse effects on forestry and aquatic life in certain areas of the world."

The report reaffirms IEHO support for a ban on straw and stubble burning. On lead, work on monitoring levels of lead in paint, dust/soil and air carried out by various local authorities is highlighted, with the comment that some findings reveal shortcomings in DOE advice, and that lack of financial help for some individual householders is a problem.

SOLID SMOKELESS FUELS FEDERATION ANNUAL REPORT

The 1984/5 SSFF Annual Report shows that increasingly close relations between the trade and local authorities helped to overcome many problems during a difficult year. This close relationship was particularly demonstrated during the miners' strike, when regular contacts were maintained between the General Manager, Ian MacKay, and environmental health officers regarding availability of smokeless fuels and the effect of the strike generally upon existing Clean Air regulations.

Throughout the strike the Federation maintained its policy that smoke control orders should not be suspended, but that local authorities should adopt a lenient policy towards any infringement. With very few exceptions this fairly reflected the views of the majority of local authorities, and certainly accorded with those of the National Society for Clean Air. During the strike seven authorities applied for and were granted formal suspension of smoke control orders for periods of up to three months.

SMOKE CONTROL PROGRESS

(Figures supplied by the Department of the Environment, the Welsh Office, the Department of the Environment for Northern Ireland and the Scottish Development Department).

	ENGLAND	WALES	SCOTLAND	N. IRELAND
Smoke Control Orders made to 31.12.83 <i>Premises</i>	5,502 8,251,883	35 11,192	307 701,610	89 101,240
Smoke Control Orders made 1.1.84—31.12.84 <i>Premises</i>	86 168,224		3 7,212	1 4,289
Total to 31.12.84	5,588 8,420,107	35 11,192	310 708,822	90 105,529
Smoke Control Orders operative to 31.12.83 <i>Premises</i>	5,447 8,131,367	34 10,754	301 687,429	88 97,121
Smoke Control Orders operative 1.1.84—31.12.84 <i>Premises</i>	85 151,281	1 438	6 16,549	1 2,970
Total to 31.12.84	5,532 8,282,648	35 11,192	307 703,978	89 100,091
Smokeless Zones (local Acts in operation)	44 41,060			
GRAND TOTAL	5,576 8,323,708	35 11,192	307 703,978	89 100,091

(Table courtesy of SSFF Annual Report)

The Federation has continued to promote smoke control, visiting and canvassing in some 89 smoke control areas. SSFF reports clear evidence among many authorities, certainly those with well advanced smoke control programmes, of anxiety to complete them, although it warns that financial restraints may well delay their plans.

During the year under review, the Federation continued to be represented on the Council of the NSCA by Ian MacKay, who is a member of the Parliamentary and Local Government Committee and also a member of the East Midlands Divisional Council. This latter representation stems from the Federation's move of offices in April 1984 from Wembley to new premises in Sutton in Ashfield.

FUTURE EVENTS

1985

29 - 31 OCTOBER — EXHIBITION "Pollution Monitoring and Control"

Organisers: Trident International Exhibitions Ltd., Tavistock, Devon PL19 0BR. To be held at Wembley Conference Centre.

Details: from Trident, at address above.

A show-within-a-show, the exhibition is being promoted alongside the established and successful exhibition and conference, "Test and Transducer". The event will highlight instrumentation already partly covered by the main show and in which a significant proportion of the 5000+ audience has an active interest and involvement.

4 NOVEMBER — SHORT COURSE "The Control of Workplace Noise"

Organisers: Centre for Extension Studies, Loughborough University.

To be held at: Manzoni Short Course Centre

Applications and details: Pat Stenhouse, Centre for Extension Studies, Loughborough University of Technology, Loughborough, Leics. Tel: (0509) 263171, ext. 249.

21 - 27 NOVEMBER — INTERNATIONAL SEMINAR "The Management and Resolution of Transfrontier Environmental Problems"

Organisers: Centre for Environmental Management and Planning Ltd., Dept. of Geography, University of Aberdeen.

The seminar will consider all aspects of water and air pollution (including toxics) in transfrontier environments and in communal media (oceans, atmosphere etc). Attention will focus on international bilateral and multilateral arrangements.

Fee: £350 (accommodation extra)

Details: Mrs. Sandra Ralston/Mrs. Lynda Kingham, CEMP, Dept. of Geography, University of Aberdeen, High Street, Old Aberdeen AB9 2UF, Scotland, UK. Tel: (0224) 40241, ext. 5188/6515. Telex: 73458 UNIABN G.

1986

22 - 28 JANUARY — INTERNATIONAL EXHIBITION CONFERENCE "Envirotech '86" — 2nd International Exhibition and Conference for Environmental Technology for Pollution Monitoring and Control. Bombay, India.

Organisers: Environmental Management Centre

Details: Environmental Management Centre, c/o CHEMTECH Secretariat, 210 Dr. D.N. Road., Taj Bldg., 3rd Floor, BOMBAY 400 001, India. Tel: (Bombay) 262044 (4 lines) 260873. Telex: 011-76163 JSCO-IN.

16 - 17 APRIL — TWO-DAY MEETING "Lead in the Home Environment"

Organisers: Imperial College of Science and Technology, Applied Geochemistry Research Group. The aim of the meeting is to examine the subject of metal contamination within and around the home. Research workers in the academic environment (UK, USA and Europe) have significant new data to present which will be of great interest to those in local government environmental health departments. The meeting will also provide an opportunity for local government officers to tell academic researchers about investigations they are undertaking and whether or not practical solutions to the problems of lead in the home exist.

Details: Dr. E.B. Culbard, Imperial College of Science and Technology, Applied Geochemistry Research Group, Dept. of Geology, Royal School of Mines, Prince Consort Road, London SW7 2BP. Tel: 01-589 5111, ext. 5543. Telex 261503.

16 - 18 SEPTEMBER — INTERNATIONAL SYMPOSIUM "Gas Cleaning at High Temperatures"

Organisers: The Institution of Chemical Engineers, in conjunction with the Filtration Society (NSCA is co-sponsoring the event).

To be held at: The University of Surrey

The programme will provide an opportunity for exchange of ideas and experience in cleaning gases at temperatures above the range covered by conventional process techniques.

Details: Mrs. G.M. Nelson, ICE, 165-171 Railway Terrace, Rugby CV21 3HQ
Tel: 0788 78214. Telex: 311780

CALL FOR PAPERS

3rd International Symposium on Environmental Management for Developing Countries:— on Tourism — Industry — Environment and Appropriate Technology for Treatment and Disposal of Hazardous Wastes. *Organisers:* ENVITEK

To be held: 6 - 12 August, 1986, in Istanbul, Turkey.

Papers describing techniques appropriate for developing countries will have priority. Authors are invited to submit a copy of a maximum 500-word abstract by December 15, 1985

For general titles, contact: The Editor, *Clean Air* (Tel: (0273) 26313).

Full details: ENVITEK (Environmental Technology, Research and Development Centre), Bahariye Cad. 56, Kadikoy-Istanbul, Turkey. Tel: (90-1) 336 4795.

Telex: 29505 ktk-tr. Attn: Envitek 105.

CONTROL OF HAZARDOUS WASTE

The Hazardous Waste Inspectorate's (HWI) first report, published in June, indicates that all is not well with hazardous waste management in the UK. The level of performance in both public and private sectors all too frequently falls below acceptable standards, although the HWI concludes that there is no evidence of harm to public health. It notes failures on the part of operators in their disposal practices, and on the part of authorities in monitoring compliance with licensing requirements and good practice. The report finds that a significant number of landfill operators seem to be ignorant of the technical and scientific research that underpins the controlled landfill disposal of hazardous waste. Such disregard of best available technical guidance is, to quote the Inspectorate, "disturbing". However, it is not possible to tell exactly which operators are most ignorant. The HWI has adopted the policy throughout the report of not identifying those responsible for practices which merit criticism, although such secrecy may not be pursued in future, more detailed, reports.

Following publication of the report, the former Environment Secretary, Patrick Jenkin, met disposal authorities to discuss measures to improve the disposal of hazardous waste. Mr. Jenkin said that a modest expenditure of an additional £1 million by local authorities in England could bring about significant improvement in deficiencies in licensing and shortcomings in policy/enforcement. Welsh authorities have been excluded because, despite the Re-Chem plant at Pontypool, DOE says that most Welsh hazardous waste is exported to England.

*A personal Comment on the Report by Terry Jones, Hon. Secretary
of the NSCA's South and Mid Wales Division*

Generally the report is welcome since it is the first time that a governmental organisation has recognised that there is a real need for waste disposal, particularly hazardous waste, to be investigated and reported upon at national level.

Several matters are well worth commenting upon, particularly the lack of a national policy on hazardous waste disposal. It does not seem appropriate that disposal is, in the main, in the hands of the private sector. Central government has involved itself in such matters as the nuclear power industry and a parallel national policy for the hazardous waste industry would appear essential. This policy could, indeed should, involve financial commitment from central government and might concern itself with such matters as transformation of waste, siting of disposal plants and research into atmospheric pollution arising therefrom. Admittedly, HM IAPI control such emissions in accordance with the Alkali Acts and Health and Safety at Work Act, but more attention must be given to the effects of emissions (especially those from incineration plants) upon the population, particularly in view of the great public unrest about the siting of these plants and the emissions therefrom.

At present there are just 4 high temperature merchant incinerators available for disposal of waste such as PCBs. Thus the UK capacity for high temperature incineration of hazardous waste is now reduced to 61,000 tonnes, perilously close to the 1984 demand of 56,000 tonnes. Should one of these plants close, then problems will emerge.

The report refers in some detail to the "dioxin" issue and concludes that there is no cause for alarm. In the Pontypool area this reassurance is based upon samples taken and a statistical exercise. It should be noted that samples taken direct from the Re-Chem incinerator stack have been obtained when a 'test' burn has been undertaken. What about spot samples other than during test burns? Torfaen Borough Council have taken some soil samples in the area but require financial assistance to sample on a regular basis. The request to the Welsh Office for such assistance has been refused. This refusal is apparently based upon the lack of evidence that there is a risk to public health. How can one obtain any evidence without the financial resources?

The statistical report produced by the Welsh Office seems to indicate that there is no problem, but the figures do not include those persons from the area who have travelled for treatment to hospitals outside Wales.

I hope the Welsh Office are not proved wrong in years to come, since the repercussions could be severe. Even the Lenihan report upon the problems at Bonnybridge refers to a need for more information.

I am of the opinion that there must be a public inquiry into the running of such plants and that a long-term sampling programme should be introduced to investigate the effects of PCBs, PCDDs and PCDFs.

Turning away from the issue of incineration of hazardous waste, the report criticises Waste Disposal Authorities for non-enforcement of licensing conditions and refers to the need for more frequent visits to be made to sites. The report also calls for more inspectors to be employed by such authorities. Is it at all possible that authorities are to be given additional finance in order to employ more manpower? Or, how about more finance to update their own sites?

Site licences are referred to in the report, but no mention is made of their revocation. It would be of some assistance if the report had indicated the grounds for revocation and particularly what is meant by the "detriment to amenity" clause.

Finally, it is to be hoped that this report will be produced annually, and the Inspectorate's report and investigations as per their main priorities is awaited eagerly.

Copies of Acid Rain and London are available on request to the GLC, Scientific Services Branch, County Hall, London SE1 7PB

UPDATE

VIBRATION — A GUIDE FOR ENVIRONMENTAL HEALTH OFFICERS

A 79 page guide to Vibration has been prepared and published by the Avon, Gloucestershire and Somerset Environmental Monitoring Committee.

The document is designed to give Environmental Health Officers a broad insight into some of the problems associated with vibration. Basic theory and practical advice are given, covering a wide range of vibration sources. These include construction and demolition, industry, quarrying and transportation. The sources and transmission mechanisms of vibration are discussed together with its effects on humans and buildings. Monitoring equipment and techniques are explained and reference is made to the legal aspects and British Standard 6472: 1984 — Evaluation of Human Exposure to Vibration in Buildings (1Hz — 80Hz).

The guide suggests suitable criteria for vibration levels and, where appropriate, overpressure levels, both in relation to planning and nuisance. Some possible solutions to vibration problems are described and practical advice is given on site investigations. The document also includes an extensive list of reference material and bibliography together with details of manufacturers and retailers of vibration monitoring equipment.

Copies of the document are available from Mr. R.I. Rogers, Council Offices,

High Street, Midsomer Norton, Bath BA23 2DP at a cost of £4.00. Orders must be accompanied by payment, cheques being made payable to A.G.S. Monitoring Committee.

DUBLIN TO BE SMOKE CONTROLLED?

According to the *Irish Times* (10 July 1985) the Irish Government has admitted that air pollution in Dublin is likely to exceed EEC limits on occasions for the next 8 years, even though legal controls are being updated and householders are being encouraged to change from coal and oil to natural gas.

The Irish Government has decided to introduce legislation under which all or part of Dublin, which has suffered London-type smog in recent winters, could be declared a smoke-free zone. The air pollution control legislation is aimed primarily at industrial users, with a scheme of subsidies and grants for the conversion of plant and coal burning equipment, but local authorities will also be given power to designate all or part of their areas as smoke-free zones and to specify types of fuel that may be burned within these areas in domestic as well as industrial dwellings.

The new legislation will be implemented on a phased basis, with local authorities acting as the licensing and monitoring agencies. Local authorities will be able to take readings of smoke emissions from trade and industrial plant, and

existing industry will be encouraged to clean up its operations through the grants and subsidies system. All new industrial plant will have to conform with stricter new regulations after July 1987. 'Straw-burning may also be subject to strict regulatory control.

DAMAGE TO HEARING BY LEISURE NOISE

The Medical Research Council's Institute of Hearing Research (IHR) have conducted a review of the medical and scientific literature relating to non-occupational noise and damage to hearing. The review was commissioned by the Health and Safety Executive and concludes that despite high noise levels generated in discos and at rock concerts, the factory floor still presents a greater threat to the nation's hearing. For people at work regularly exposed to noise at or above the 90 dB(A) limit, leisure activities are unlikely to add to their overall noise exposure. Only at much lower levels is the leisure contribution likely to be significant.

However, the review accepts that there are individuals for whom regular attendance at discos or pop concerts is a risk. Rock musicians, DJs and others working regularly with high "entertainment" noise levels run a risk of hearing loss similar to workers employed in the traditionally noisy manufacturing industries.

The IHR experts criticised many of the studies they reviewed, describing the work as "disappointing in its poor design, methodology and reporting". They singled out one paper on effects of amplified music as the best available, but even then felt that its estimates of num-

bers of potential victims of hearing loss might be too high by a factor of between 3 and 7. The MRC experts considered that more accurate data might be obtained through a large, random-sample, whole population survey of exposure rates and patterns for leisure noise in general, and amplified music in particular.

What clearly emerges from this review is that amplified music is the major leisure time source of hearing hazard, ahead of shooting, arcade games, fireworks, toys, cars/motorcycles, aircraft, motorboats, underground and subway noise — and even the noise of children themselves.

In one area where much anxiety has been expressed, the use of personal cassette players, the survey found that in most of the studies the wearers had not chosen a playback level at or around industrial noise limits. This confirmed the reviewers' overall impression that listening to loud music, by whatever medium, is unlikely to affect hearing very much except in the extreme cases of rock musicians and DJs.

Indeed, the IHR experts considered noise from guns to be potentially a much more serious auditory hazard, probably with a considerable number of people involved. But, unlike discotheque noise, this hazard is widely recognised and much easier to control since the use of ear protection is usually needed for only brief periods and does not interfere with enjoyment of the activity. In fact, ear protectors worn while shooting are accepted and common place. Nevertheless, the report notes that some people do not protect their ears, especially in rough shooting and sometimes in cadet forces (especially when using blank ammunition) and that therefore there is a continuing need for health

education in that area.

Copies of the review, *Damage to hearing arising from leisure noise: a review of the literature*, are available from HMSO or booksellers, price £9.00 (ISBN 0 11 883817 2).

Another interesting source of information in this area is the 1985 NSCA Conference Paper by Michael J. Gittins of Leeds City Council, entitled *Entertainment Noise*. This reviews the whole range of leisure activities which give rise to noise and risk of hearing damage, and is available from the National Society for Clean Air, price £0.95.

EC DIRECTIVE ON WATER QUALITY

The EC Directive designed to limit pesticides, metals and nitrates in drinking water (*Directive 80/778*) came into force on 17 July 1985. It sets specific limits for concentrations of various contaminants in tap water: 0.5 mg/l for total pesticides, 50 mg/l for nitrates and 0.2 mg/l for aluminium, among other values. However, it is doubtful whether these limits can be met in all parts of the UK for some considerable time. As noted in the last edition of *Clean Air* (page 71) average concentrations of nitrate in UK rivers have roughly doubled over the last 20 years. This is largely an agriculturally derived problem and both the Anglian Water Authority and the Severn-Trent WA have applied through the Government for delays in complying with the standard.

Lead is the most widespread pollutant in UK tap water. Currently, 288,000 homes in the UK receive tap water with lead levels in excess of both the EC Directive limits and WHO limits. The Government previously set 1989 as the target year for

meeting the lead limit in the UK, but it is understood that some areas will not meet the limit until the mid 1990s.

At a meeting of the Southern Region of the Institution of Environmental Health Officers in Guildford in July, Mike Jacobs of the Department of Health and Social Security advised environmental health officers that they need not embark on new sampling programmes under the EC Water Quality Directive. Mr. Jacobs stated his belief that the DHSS booklet "*The bacteriological examination of water supplies — Report No. 71*" provided all the necessary guidance for EHOs on public water quality.

David Wheeler, Research Officer of the Department of Microbiology, University of Surrey, criticised Mr. Jacobs' view as representing a level of complacency which he hoped did not reflect official DHSS policy. Pointing out that the practices embodied in Report 71 did not include policy on contaminants of public water supplies such as lead, nitrates, aluminium and human enteric viruses, Mr. Wheeler asked whether it was intended that EHOs around the country should ignore the threat to health posed by such contaminants which were present in levels exceeding EC limits. Mr. Wheeler drew attention to the view of the World Health Organization that it was vital that quality assurance should not be left simply to the water supply agency but that supplementary, supervisory quality surveillance should also be undertaken by national or municipal health authorities. He expressed the hope that the DHSS would clarify their guidance to local environmental health departments in the UK, to reflect more accurately their real responsibilities under the EC Directive.

LEAD

Action on anglers' lead shot

The Government has announced that it will ban the sale of most lead shot for angling from 1 January 1987 if self regulation by the angling organisations has not worked by the end of the current coarse fishing season. In the Royal Parks an immediate ban on the use of lead shot for angling already operates on the issue of all new licences. MAFF will be publishing draft model bye-laws which Water Authorities in England and Wales can use if they want to ban the lead weights in their areas.

Government action follows a report by the Nature Conservancy Council which concluded that more than 3,000 swans die each year after ingesting anglers' lead weights. NCC evidence suggests that it is the recently discarded weights, not yet sunk into the mud, which do the most damage. A technical group has been asked to consider alternatives to lead weights.

Leaded Paint

Following the agreement between Government and the Paintmakers' Association of Great Britain to stop producing paint with added lead after June 1987, and that cans should carry "no added lead" labels, the Government now hopes to persuade its European Community partners to take similar action.

The Government has claimed credit for persuading the Paintmakers' Association to introduce lead-free paint, but it should be remembered that it took

considerable pressure from CLEAR to open the way for the accord between DOE and the Paintmakers.

Introduction of Low Lead and Unleaded Petrol

The *1981 Motor Fuel (Lead Content of Petrol) Regulations* make it an offence to sell petrol containing more than 0.15 grammes of lead per litre of petrol on or after 31 December 1985.

The Secretary of State for Transport has however proposed an amendment to the Regulations which will give a transitional period, up to 31 March 1986, during which petrol delivered to retail outlets before 16 December 1985 – and containing up to 0.40 grams per litre – may continue to be sold or used. The amendment is designed to help keep costs down by avoiding the need for special production and distribution arrangements for a small number of outlets in rural and holiday areas. The oil industry will be able to fix a single date – 16 December 1985 – after which all deliveries will be of low lead petrol, a fortnight being long enough to wash out of most retail tanks the remains of higher lead petrol delivered before that date.

BSI has revised *BS 4040*, the existing British Standard for petrol, to come into line with the impending reduction in lead content. *BS 4040, Specification for leaded petrol (gasoline) for motor vehicles*, specifies the various grades of petrol on public sale in the UK and features the well known "star" system of designation displayed on the pumps.

The revised BS 4040:1985 becomes effective on 31 December 1985. A companion British Standard for unleaded

petrol, BS 7070, is now being prepared and will be published before the end of the year. This sets standards for the physical and chemical properties of the fuel in a similar manner to the standard for leaded petrol, and picks up the specific requirements of EC Directive 85/210/EEC regarding lead and benzene content.

The *Motor Fuel (Lead Content of Petrol) (Amendment) (No. 2) Regulations 1985* have been prepared to permit the sale and use of petrol conforming to both the lower lead, and the unleaded, standards. These draft regulations specify that on or after 31 December 1985 leaded petrol should contain no more than 0.15 grams of lead per litre of petrol; if the petrol is unleaded, it should contain no more than 0.02 grams of lead per litre before 1 April 1990, and on or after 1 April 1990, no more than 0.013 grams of lead per litre.

The draft regulations also delete the separate provision which makes a reduced maximum penalty for the use, as opposed to the sale, of fuel not complying with the Regulations. A maximum penalty for any breach of the Regulations of £2000 on summary conviction, or an unlimited fine on indictment, is proposed.

Lead Guide

As to control of lead at work, the Institute of Petroleum has published a guidance booklet related to the blending of concentrated lead alkenes into motor and aviation fuels and the bulk storage and distribution of products. The booklet, *Guidance on control of organic lead in refineries, and bulk storage and distribution of leaded gasoline*, is available from the Institute of Petroleum,

61 New Cavendish Street, London W1M 8AR, price £5.00.

Stricter Control on Lead Emission

A stiffer emission control for lead works of 10 mg/m³ has been introduced by the Industrial Air Pollution Inspectorate (IAPI) in revised guidance.

The 1983 Report of IAPI referred to a review of Best Practicable Means (BPM) Notes for lead works which the Inspectorate was to undertake with the Lead Development Association; the outcome of that revision is the new BPM note.

The stringent new emission limit would previously have been considered practicable only for larger works, but advances in performance and reliability of high-efficiency fume filtration equipment in recent years means that 10 mg/m³ is now recognised as achievable for all emission sources.

The new BPM Note places emphasis on requirements for preventing low level emissions of lead containing dusts from raw materials and product handling. These requirements incorporate many of the recommendations made by an earlier IAPI working party.

Guidance is provided on sampling and measurement of emissions and monitoring, emission limits and controls, materials handling and storage, operational controls and on chimney heights and design.

Copies of the BPM Note 16/85, Lead Works can be obtained from the Sales Point, Health & Safety Executive, St Hugh's House, Stanley Precinct, Bootle, Merseyside, L20 3QY; ISBN 0 7176 0248 9, price 50p.

DISTANCE LEARNING TRAINING IN POLLUTION CONTROL

A £600,000 Manpower Services Commission Open Tech project to achieve a radical improvement in the training and up-dating of key personnel in the management and control of all aspects of pollution control was announced earlier this year. Aimed at industry and the public sector, the project is based on a consortium led by Leicester Polytechnic and involving a partnership between them and Imperial College London, and Loughborough University of Technology.

This is a unique coming together of three major institutions across the "binary line" of higher education to promote a radically different form of learning to improve the knowledge of people in industry and the public services who need to be involved in effective and economic pollution control.

The material will be carefully structured to enable self-learning to take place in the office, factory or home and will employ a multi-media approach. Extensive market research has been carried out by the consortium and a substantial and growing demand from both industry and the public services has been identified. Recent tragic events involving chemicals underline the importance of a high standard of training in pollution control and management, both in the UK and overseas.

The funding of £600,000 is for a period of 2¼ years and is from the Open Tech Unit of the Manpower Services Commission.

Principal members of the consortium team are:

John Clarke, Project Director and Head of the Centre for Educational Technology and Development, Leicester Polytechnic; Malcolm Fox, Deputy Project Director, from the School of Chemistry, Leicester Polytechnic; Sonia Withers, Project Co-ordinator, for Loughborough University of Technology from the Centre for Extension Studies; Richard Macrory, Project Co-ordinator, for Imperial College from the Centre for Environmental Technology; Richard Grant, Project Manager, Leicester Polytechnic.

NIFES TRAINING COURSE ON AIR POLLUTION CONTROL

NIFES, the National Industrial Fuel Efficiency Service, has announced the availability of a Training Course on Air Pollution Control. The Course is designed to serve the needs of those responsible for the control of air pollution and should be of value both to those working in local government, enforcing the legislation, and those with responsibility in industry.

Starting from fundamental principles, the course covers the efficient use of energy to minimise pollution at source and progresses to the use of gas cleaning processes to reduce atmospheric pollution. Legislative aspects and the role of monitoring are covered in detail. The course concludes with an examination of pollution control in various industries. Throughout, the relationship between pollution control and the efficient use of various forms of energy is emphasised. There is a bias towards the practical aspects rather than theoretical concepts.

The course is conducted by a panel of lecturers from NIFES together with

several visiting speakers from local authorities and other organisations concerned with air pollution problems and their control.

Training is primarily by lectures with a total time commitment of approximately 120 hours. Some time will be taken up with open-learning material. As a result, participants will only have to be released from their employment for approximately 12 days in a six month period. In addition, technical visits are arranged to support the lectures.

The syllabus covers the following areas:

The nature and sources of air pollution
The sampling and analysis of air pollutants

The law concerning air pollution control
Combustion processes

Fuel technology

Furnaces

Air Pollution Control Technology

Industrial Air Pollution Control

The course is fully approved by the Royal Society of Health for the requirements of the Diploma in Air Pollution Control.

If you are interested in receiving further details of this or other training programmes offered by NIFES, contact: *Dr. R.S. Barratt, Training Manager, NIFES, Malvern House, Mapperley Road, Nottingham NG3 5AQ. Telephone: 0602 625841/5*

CHANGE AT THE TOP FOR IEHO

Ken Tyler, Secretary of the Institution of Environmental Health Officers (IEHO) since January 1978, has taken early retirement. Until his successor could be

appointed, Doug Smith stepped in as acting secretary.

Don Barnett, Chairman of the Institution's General Council said, "Ken Tyler is much respected as an ambassador of both the profession and the Institution; his breadth of knowledge of Institution affairs will be sorely missed at Chadwick House".

Ken joined the headquarters staff as an Assistant Secretary in 1962 and was elected a Fellow in 1971. Since his appointment as Secretary he has overseen major changes in the work of the organisation, notably the change to Institution and Chartered status, the responsibility for education matters, the acquisition of freehold office premises, the Centenary celebrations and the greater recognition of the profession throughout the UK and in Europe.

The Society wishes Ken Tyler a very happy and rewarding future.

7TH WORLD CLEAN AIR CONGRESS AND EXHIBITION

Preparations for the 7th World Clean Air Congress, to be held in Sydney, Australia, are well advanced.

A Clean Air Exhibition is being held in conjunction with the Congress, in Sydney Town Hall, from Tuesday, August 26 to Thursday August 28 1986.

Companies and organisations interested in exhibiting at the Clean Air Exhibition '86 are advised to contact the exhibition organisers direct at the following address: *Total Concept Exhibitions, P.O. Box 127, Brookvale NSW 2100 Australia. Telex: AA 72262 TOCOEX Telephone: (02) 332-3777.*

SEE HANDBOOK

The UK Society of Environmental Engineers has just published the second edition of the *SEE Handbook*. This provides a comprehensive listing of products and services offered by SEE's members, together with their names and addresses. The 232-page publication also contains much valuable information for workers in the environmental engineering and associated fields. For example, if you are an MI5 or CIA crateologist, you will find sections 10 and 11 on packaging requirements and cushioning theory irresistible! The section on acoustics will be of more immediate interest to *Clean Air* readers, with tables on A, B, C and D weighting curves and values; combination of identical sources, pressure vs altitude; addition of level in dB; Steven sone; NR value; sone to phon conversions; and loudness calculation.

The Handbook is published by the Society of Environmental Engineers, Owles Hall, Buntingford, Hertfordshire, SG9 9PL. Telephone: 0763 71209. Price £8.00.

POLLUTION MONITORING WITH LICHENS

Collaboration between the British Lichen Society and Dr Mark Seaward, of Bradford University's School of Environmental Sciences, has resulted in the publication of a second volume of the *Atlas of the Lichens of the British Isles*.

Lichens are complex, slow-growing plants and are extremely sensitive to changes in the environment, particularly air

pollution. When mapped in detail they provide a wealth of important information since the various species respond in different ways to a whole range of environmental conditions, and can be very precise indicators of changes in the quality of the air we breathe. Long-term and short-term changes' for good or ill, can therefore be monitored with considerable accuracy over large geographical areas.

One of the largest files stored in the University's Mainframe Computer is a database for mapping the lichen flora of the British Isles. The basic fieldwork has been carried on continuously by the British Lichen Society since 1963, when Dr. Seaward became director of the research programme. Since his appointment to the School of Environmental Science at the University this information has been transferred to computer file and is continuously updated.

The software to process the considerable data accumulated has been developed in the University's Computer Centre, mainly by Dr S J Houghton, and is now so highly sophisticated that it is possible to produce a whole range of output, including atlases. The maps for the first volume of the *Atlas of the Lichens of the British Isles*, published in 1982 by the Natural Environment Research Council, were produced by a laborious manual process and the publication of them took two years. In sharp contrast, the second volume, recently published by the University, took a mere six weeks to progress from computer file to final published form!

The *Atlas of the Lichens of the British Isles* is available, price £2.50 (plus £1.00 postage) from: School of Environmental

Science, University of Bradford, Bradford BD7 1DP.

NEW BUILDING REGULATIONS

New Building Regulations were published in August 1985. Much simpler and shorter than the old regulations, they eliminate controls over the erection of certain small buildings and small extensions, and over some alterations and changes of use. The Government has stated that the regulations will be subject to continuing review to ensure that they comply with the principles for minimising regulatory controls set out in the Government's White Paper "Lifting the Burden", and are the minimum required to ensure health and safety.

Many local authorities are concerned about the deregulatory intent of "Lifting the Burden", specifically that standards for sound insulation between dwellings should not be weakened any further.

The new Regulations are supported by *Approved Documents* giving practical guidance on how to meet the requirements. The *Manual* contains the regulations, explains the new system of control and provides a link between the technical requirements and the Approved Documents.

The Building Regulations 1985 supersede the 1976 regulations and are 25 pages long compared with the old, 306 page version. The supporting Approved Documents are written in straightforward terms with accompanying diagrams and refer to British Standards.

The *Manual* is available from HMSO, price £6.20 and the following Approved Documents are also available:

Materials and Workmanship	(£1.60)
A Structure	(£5.70)
B Fire	(£6.70)
C Site Preparation	(£3.50)
D Toxic Substances	(£1.10)
E Sound Insulation	(£4.00)
F Ventilation	(£2.00)
G Hygiene	(£2.00)
H Drainage and Waste Disposal	(£3.50)
J Heat-producing Appliances	(£3.00)
K Stairways, Ramps and Guards	(£2.50)
L Conservation of Fuel & Power	(£3.50)

NEW OCCUPATIONAL EXPOSURE LIMITS LIST

A new list of agreed occupational exposure limits (*Guidance Note EH40*) for workers has been published by the Health and Safety Executive. It is the first annual revision of EH40 and contains a number of changes and additions to the original text and lists of controlled and recommended limits.

Revisions include additional guidance on exposure limits for dust and the application of short term exposure limits.

In the new *Guidance Note*, the Health and Safety Executive has also given advice on substances for which no acute effects are known, as follows:

"For those substances for which no short term exposure limit is listed, it is recommended that a figure of 3 times the long term exposure limit, averaged over a 10-minute period, be used as a guideline for controlling exposure to short term excursions".

Copies of *EH40/85 Occupational Exposure Limits 1985* are obtainable from HMSO, price £3.25 (ISBN 011 883516 5).

GOOD NEWS

This is the first "Good News" column in Clean Air. Please help us to run more Good News stories by sending in your contribution.

CHESTERFIELD COMPLETES ITS SMOKE CONTROL PROGRAMME

Chesterfield celebrated completion of its smoke control programme with a special exhibition, held 2-4 October in the Lecture Hall, New Square, Chesterfield.

Over a period of 25 years the Chesterfield Borough Council has succeeded in smoke controlling the whole Borough area. The first Order was made in 1960 by the former Chesterfield Borough Council with subsequent Orders being made by that authority and the former Staveley Urban District Council and the Chesterfield Rural District Council. The 19th and final Order came into operation this year, on 1 September. For an estimated total cost of £1.3 million, 97,200 residents living in 39,600 dwellings in the 6,582 hectare area of the Chesterfield Borough Council now enjoy clean air. And clean it is — smoke concentrations are down to an eighth of their former level, and sulphur dioxide levels have fallen to one-fifth of the level in the early 1960s, as the following figures show:

	1962/3	1984/5
	<i>micrograms per cubic metre</i>	
smoke	161	21
SO ₂	98	22

Chesterfield BC is the first local authority in Derbyshire to complete its smoke control programme. The Borough covers an area at the gateway of the Peak National Park; Chesterfield itself is a market town with diverse industries including coal mining, and has a redeveloped Town Centre that has received national and international awards.

The Chesterfield Borough Council has been an active member of the East Midlands Division, NSCA, for many years.

The completion of the smoke control programme in this pleasant and progressive town is indeed "Good News", and the Society extends its warmest congratulations.

CONTINUED DECLINE IN POWER STATION SO₂ EMISSIONS

The miners' strike of 1984 and 1985 resulted in a considerable change in the balance of fuels consumed in CEGB power stations. Much more oil was burned than would have occurred without the strike. Despite this, sulphur dioxide emissions from CEGB power stations continued the decline they have shown in the 1980s as the following provisional estimates show:

	1983/4	1984/5
	<i>million tonnes</i>	
Fuel: Coal	77.21	40.49
Oil	2.72	22.80
SO ₂ emitted	2.42	2.26

Because coal-fired power stations are mainly concentrated in the Midlands and North and oil-fired power stations in the South, the miners' strike resulted in a considerable geographic change in emissions. Increased emissions from power stations in the South East most likely resulted in short lived peaks of high concentrations of SO₂ over London. Despite this, the GLC have reported that for the winter of 1984/5 the EC Directive limit values for sulphur dioxide were not exceeded.

CONGRATULATIONS, SIR YEHUDI

Yehudi Menuhin, the violinist, who is a long standing supporter of the National Society for Clean Air, was invested as a Knight Commander of the Order of the British Empire by the Queen on 25 July last. Sir Yehudi was made an Honorary KBE in 1965 but only this year became a naturalised British Citizen, allowing him to use the title.

CLEAN AIR IN THE CITY

Londoners celebrated 30 years of breathing clean air in the City on October 2 1985, thanks to the City of London Corporation. The City Corporation became the first local authority in Europe to designate its entire area a "smokeless zone" in October 1955, following the City of London (Various Powers) Act 1954.

More good news from the City Corporation is that all installations within the City of London now comply with the 1% limit on the sulphur content of fuel oil specified in the special powers acquired under the 1972 Various Powers Act.

PNEUMATIC TOOLS SILENCED

HSE has agreed with all known suppliers of pneumatic tools that new chipping hammers over 3.5 kg weight will be fitted as standard with appropriate means of exhaust air silencing.

AIR POLLUTION IN NEW ZEALAND, 1984/85

The New Zealand Clean Air Society Inc., a member of the National Society for Clean Air, reports a change in official attitudes to local air pollution problems in New Zealand. According to the Society's President, Janet Holm, one important step has been the reduction in the sulphur content of coal sold in Christchurch and another is the effort by local government to persuade the Minister of Energy to hold electricity prices steady, a move which has reinforced the New Zealand Clean Air Society's long time efforts to persuade the Government to give official clean air zones concessions on electricity prices.

Another major commitment was the ruling labour Party's election policy statement that it would make lead free petrol available as soon as possible, and implement a general reduction in petrol lead levels.

The New Zealand Clean Air Society has, like its UK counterpart, become increasingly interested in the problem of noise. New Zealand legislation covers only a limited range of neighbourhood noise sources and the Clean Air Society is now gearing itself up to campaign for overall noise reduction.

INDUSTRIAL NEWS

Midland Environment Ltd.

Midland Environment is one of six "environmental" companies recently launched at Aston Science Park. A professional research and consultancy organisation, Midland Environment offers a range of cost-effective services related to environmental and pollution problems.

The principal services are air, water, soil and noise monitoring together with computer mapping of ambient pollution, emissions sources, waste generation and land use. Other work undertaken includes: sample diagnosis; expert advice and representation; the preparation of planning applications and environmental impact statements.

The company works with clients in industry, central and local government, the professions and the public. Commissioned work is carried out in a streamlined professional manner, but to rigorous scientific standards.

Midland Environment was established by three research scientists formerly at Aston University — Dr Bob Pocock, Dr Nick Rufford and Dr Steve Simmons. Much of the work now carried out by the company involves techniques and expertise developed through original research at the University, for example; computer modelling of chimney plume dispersion, contaminated dust fall-out and domestic and industrial waste generation.

The company maintains a sophisticated range of in-house technical equipment for the monitoring of noise, airborne pollutants and trace elements in the environment. A cooperative arrangement with Aston University provides further access to specialised laboratory and

computing facilities. This broad-based technical support helps cut costs and meet the complex and multidisciplinary nature of today's environmental problems.

In addition to surveillance and investigation services the company has developed a comprehensive databank of information on environmental conditions. A computerised regional database, REGIS (Regional Environmental and Geographical Information System) is currently being established as a cooperative venture with Aston University's Civil Engineering Department. The information archive is continually updated and provides a baseline for monitoring changes in environmental condition with the passage of time.

Reader Enquiry Service No. 8519

SITEFILE: A New Computerized Database to Locate Waste Disposal and Treatment Sites

With the first report of the recently established Hazardous Waste Inspectorate pressing for improved standards from all involved in waste disposal, Aspinwall and Company announce the launch of a new and innovative computerized database for waste management.

SITEFILE is the first commercially available computerized intelligence service on each of the 5,500 authorized waste disposal and treatment facilities in Great Britain and is marketed through Aspinwall Data Information and Training Ltd. Using modern information technology to provide quick efficient access to data sources, SITEFILE has

been designed to cater for waste generators, contractors and disposers and anyone else with an interest in waste management. It offers a range of services to provide information abstracted from public records on the location and contact address of each facility, who the licensed operator is, the waste types they are authorized to handle, in what form and amounts, together with other licence conditions on waste input.

Clients can request searches of the database covering any area of the country, using a specification selected from an index of over 450 waste types and 50 other types of sites (landfills, incinerators, treatment plant, etc). Details of sites which match the search specification are presented in comprehensive site profiles using a uniform, easy-to-follow format.

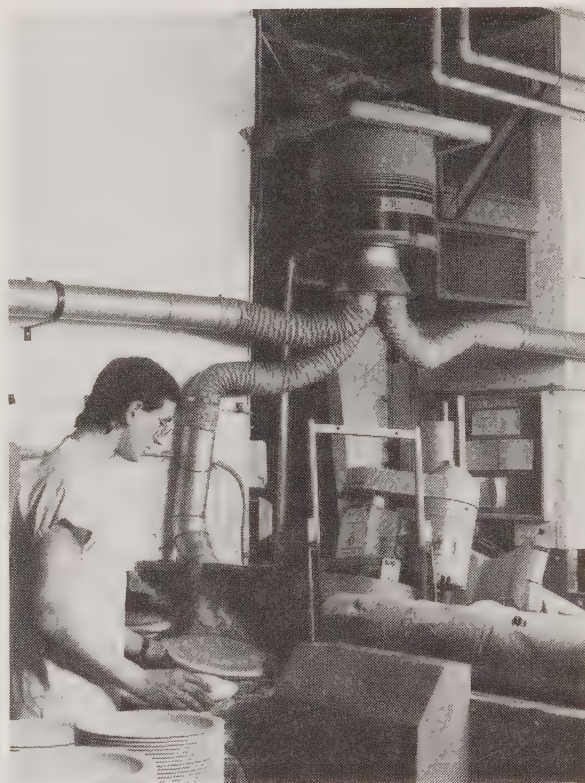
SITEFILE is available through an annual access agreement or as one-off reports. All information is kept up-to-date by a rolling programme of file revision. Reader Enquiry Service No. **8520**

Pollution in potteries — a cost effective method of elimination

One of the market leaders in the pottery industry, the Stoke-based Churchill Group, claims that an oil mist filter unit has not only improved its factory working environment but has also increased productivity by around five per cent.

Review of the Group's fire safety precautions first caused Mr Ray Colclough, Engineering Manager of the Churchill hotel and tableware potteries, to investigate the advantages of 'Filtermist' — a range of filter units

specially designed to eliminate machine shop pollution at source and, because they work on the principle of impaction, require only minimal maintenance. Now that the units have been in use some nine months, a number of additional benefits have emerged.



The models installed at two of the Churchill factories comprise an impaction drum fitted with one or more ducts which are strategically positioned to draw in the oil vapour given off by the plate-making rollers — oil being the essential releasing agent sprayed on to the roller dies. Apart from minimising the spread of oil into the atmosphere, on to the operator and into the driers and other plant, the oil is also reclaimed and reused, thus effecting significant savings over a period.

What is more, now that the operator, whose wages are based on piece work, does not have to clean the roller die so often, his own productivity also increases. Reader Enquiry Service No. **8521**

New CO gas monitoring unit from Cerberus

A new carbon monoxide gas detector and alarm from Cerberus is designed specifically for use in garages and covered car parks — key areas where there is a danger of CO build-up.



Even a low concentration of CO is dangerous, and this is common in garages and parking areas, where it can build up as a result of incomplete combustion of fuel. Colourless and odourless, those working in these situations would be unaware of the danger without a suitable detection device. Only the results of exposure become apparent — initially drowsiness, these can become loss of consciousness and eventually suffocation.

The new Cerberus gas detector continuously measures the concentration of CO and exhaust fumes, and when a pre-determined level is exceeded, the device generates an automatic advance warning. If the concentration continues to rise, an alarm is sounded, but this operates before the effective danger threshold is reached.

In both cases, preprogrammed safety measures which have proved effective

can be initiated, e.g. activation of ventilation systems, opening of doors and windows. Depending on the location, supervisory staff and emergency crews are also alerted.

Reader Enquiry Service No. **8522**

Committee of European Environmental Engineering Societies

A number of European Societies representing Environmental Engineering, which is the branch of engineering responsible for the testing of, among other things, electronic, defence and communication systems to function within their operational environments, have joined together to form the Committee of European Environmental Engineering Societies (CEES).

Founder Societies of the new Association include France (ASTE), Great Britain (SEE), West Germany (GUS), Sweden (SEES) and Switzerland (SSEE) and it is expected that each country will, in rotation, hold the Secretariat and Chairmanship for a period of two years. The first Chairman is Mr. W.B. (Bill) Roberts, of British Aerospace, and the Secretariat has been taken up by the British Society of Environmental Engineers based at Owles Hall, Buntingford in Hertfordshire, under the control of the General Secretary, Mrs. Helen M.W. Gibbons.

One of its first actions was to formulate a co-ordinated European view on environmental test techniques to present at the American Institute of Environmental Sciences Conference in Las Vegas in April, 1985.

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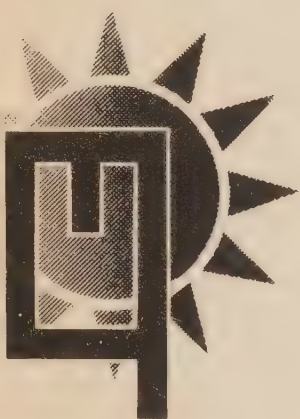
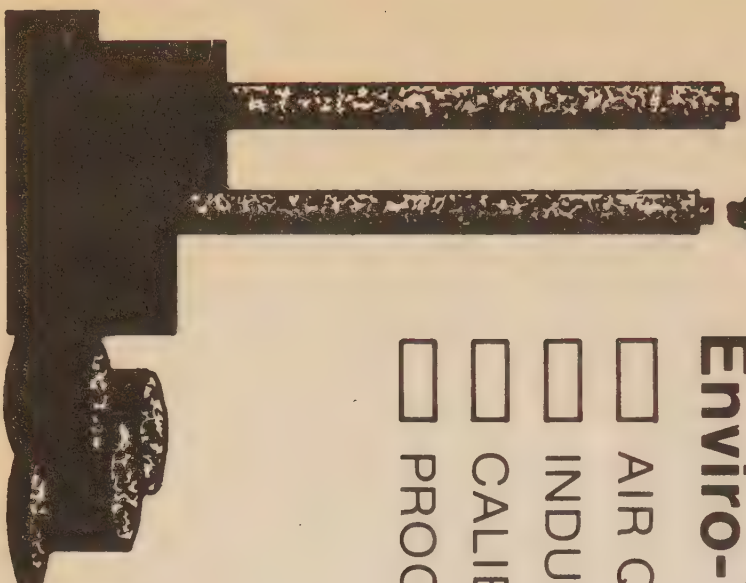
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CLEAN

1985

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AIR



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CLEAN AIR

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A CENTRE OF EXCELLENCE

"Centres of excellence are slow to develop but easy to destroy", said the House of Lords Select Committee on Science and Technology in April 1985, identifying the threat to scientific and technical services which the abolition of the GLC and metropolitan county authorities presents. The Select Committee's final report, published 12 December 1985, is equally firm:

"The Committee have drawn attention to the importance of the GLC's Scientific Services Branch, both regionally and nationally The Committee consider it essential that this London-wide service should continue."

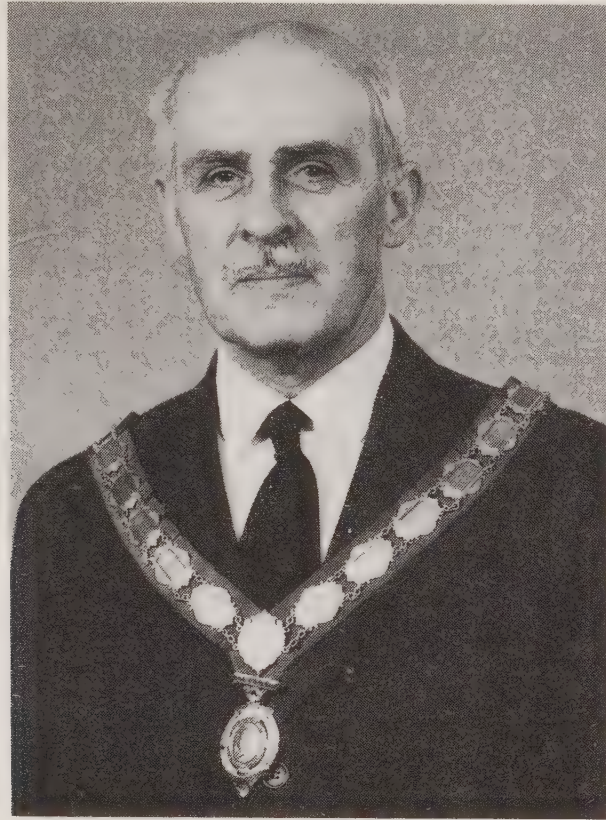
For more than a quarter of a century the GLC's Scientific Services Branch has played a unique role in applying science to the community needs of a complex conurbation, and in providing information essential to the formulation of control policies. The article by George Vulkan in this issue illustrates the range of the Branch's work in the area of noise control. In the past, we have published details of the fuel use/pollution emission inventories which were evolved in London by the GLC team, a methodology which is beginning to be effectively applied in other major UK cities. The Branch has not hugged its knowledge jealously to itself, but has always been happy to supply speakers with the highest level of professional expertise at NSCA events, to the wider benefit of environmental protection workers everywhere.

This Society, along with the House of Lords, the Royal Commission on Environmental Pollution and many more bodies and individuals, has pressed the Government to preserve the Scientific Services Branch following abolition. With only weeks to go before the GLC ceases to exist, the future of the Branch is still wide open. Its highly qualified staff have faced the uncertain future resolutely until now, determined to hold the team together. But with the issuance of redundancy notices, morale must be shaken by the lack of any firm commitment to provide a framework for continued scientific and technical services.

This situation is deplorable, and must be resolved. The resolution should be the retention of the Scientific Services Branch in substantially its present form, whether reconstituted on a commercial basis with tide-over funding from Government, or continued as a public service for the benefit of Londoners and the community at large.

THE PRESIDENT'S ADDRESS

Given by Cllr. Len Poole, BEM, JP, President of the NSCA, at the 52nd Annual Clean Air Conference on 14 October 1985.



Today, I am the proudest man in the land, the Society having conferred upon me its highest accolade by electing me as your President. No doubt the Society would cite many reasons for bestowing this office upon me; for my part I am clear that I have done no more than my job as an elected representative of the people of Middlesbrough, and because of this I feel that the Society is also recognising the splendid achievements of the local authorities over the years in improving the environment.

Looking at the long list of my distinguished predecessors, I am flattered and humbled by my election to their company — and tickled pink to think that the title of “Councillor” now appears upon it. But whatever our backgrounds, the one thing that I have in common with each of my predecessors is a fervent commitment to clean air and the promotion of a cleaner, healthier, quieter environment.

But times change and priorities change and I have, therefore, been reading the history of the Society to see what lessons it may have for me in my new role. In a few minutes I can, of course, do no more than highlight some of the major events.

Despite changes in name and a merger, the Society traces its descent directly from the Coal Smoke Abatement Society — that was formed in London in January 1899 after a series of preliminary meetings the previous year. The Society bore that explicit name for the next 30 years. Its first objective was to enforce the law. In 1891 a Public Health

(London) Act had been passed which included smoke nuisance provisions similar to those introduced for the rest of the country in the Public Health Act 1875. However, the Vestries — the forerunners of the Borough Councils — neglected to use the powers provided in the Act to the extent that our founding members were convinced that they must form a Society to obtain evidence with which to institute prosecutions and prod the local authorities into bringing them. The resolution passed by the first meeting read:

“That a Society be formed, and a Committee appointed, to consider and report how best Vestries and other municipal bodies can be aided by public support to enforce the clauses in the Public Health Acts which relate to smoke consumption”.

In the next 10-15 years, the young Society made striking progress. It acquired a part time paid Secretary and other voluntary staff to implement the recommendations of the Committee. By 1902 it had completed its first important investigation — the testing of domestic grates. The results were published in *The Lancet*. However, the routine work of the Society was to press for the law to be administered — and, as funds permitted, it employed its own inspector, a Mr. William Petty. In 1903 he reported 2000 observations leading to 1278 complaints being forwarded to the local authority.

By that time a number of authorities were employing their own inspectors but, as you might expect, the Society was not popular with those less enlightened. One authority in East London received 572 complaints without a single case being brought before the court — despite the fact that in two cases the nuisance was so scandalous that an adjoining Borough had issued summonses on the report of its own officers and had obtained convictions!

In 1905 the Society was able to hold, jointly with the Royal Sanitary Institute, its first Conference and Exhibition. 1906 was particularly interesting in that the Society extended its remit beyond smoke abatement to include indoor pollution — with a programme to test gas fires and gas stoves for carbon monoxide and other emissions.

In 1907 the Society inaugurated a movement which it has fostered and encouraged ever since — the training of boiler operatives and stokers. And so its work continued. In an interesting and far reaching development in 1910, the Society initiated a scheme, in conjunction with the commissioners of *The Lancet* Laboratory, to monitor particulate fallout in the Metropolitan area. A gauge was constructed for catching the deposit which was in all essentials exactly the same as that used today. Three sites were chosen and the deposits were analysed for insoluble matter, sulphates, chlorides and lime. From this small beginning the observations were continued and expanded and, in 1912, handed over to the Meteorological Office which continued to supervise and collate the records until 1926 when the work was taken over by the newly established Standing Conference of Co-operating Bodies and the Department of Science and Industrial Research became responsible for the Government side.

In less than 30 years the Coal Smoke Abatement Society had established a solid reputation for innovative thinking, for balanced argument, for progressing research and for public education.

While the Coal Smoke Abatement Society was concentrating its efforts in London, other cities were forming their own associations and in 1909 those in Leeds, Glasgow, Manchester and Sheffield met in Conference and formed the Smoke Abatement League of Great Britain with its headquarters in Manchester.

Whilst the Society and the League were well disposed towards each other and progressed much of their work in concert, the first World War halted progress and it was some years after before the two bodies were to move forwards again. In the early 20s they concentrated their efforts on supplying evidence to the Government which led directly to the passing of the Public Health (Smoke Abatement) Act of 1926.

It is interesting to note the differences in approach between the London Society and the Manchester-based League. The Society had depended entirely on individual subscriptions and had turned its face resolutely against contributions from industry and commerce. The League, on the other hand, made a drive for the support of the local authorities and was prepared to receive help from any "vested interests", while making claim that such support would not interfere in any way with its independence! In 1928 the Society and the League amalgamated to form the National Smoke Abatement Society with headquarters in Manchester. Dr. des Voeux was elected as the first President and Arnold Marsh was engaged as the Society's first full time paid General Secretary and Editor. Annual Conferences started — the first being held at Buxton in 1929 and the second at Leicester in 1930. That the latter even attracted a Civic Reception shows just how far the Society's relations with the local authorities had improved!

Nevertheless, the 1930s were as difficult for the Society as they were for the nation, struggling against economic recession, a surplus of coal and widespread unemployment in the mines. However, membership and influence grew and new ideas were advanced and discussed. One which deserves special mention was the brilliant concept of the smokeless zone which was put forward by Charles Gandy — a Manchester barrister who was also Chairman of Council. As you will know, this idea was developed into the smoke control area which became an integral part of the 1956 Clean Air Act. Another idea put forward by the Society was that of prior approval to ensure that all industrial plant would be smoke-free from the start. Although the concept originated abroad, it was the Society which first pressed for its adoption by the UK. Finally, in the face of strenuous opposition from many quarters, the Society more and more criticised the domestic open coal fire as a major source of pollution. The arguments this inspired in the long run did much to spread a national awareness and acceptance of the case for clean air. In 1936 the headquarters moved back to London to be closer to central government and Parliament.

Though activities were severely cut when the war began in 1939, the Society was kept together and, although there were no meetings for some years, the journal continued to be published without a break. The Society produced yet another first — in 1942 — when it proposed that the new types of improved open grate then being developed, and which were suitable for any smokeless fuel, should be installed in all new houses — and that smoke prevention should be an integral part of any fuel policy. Before long the smokeless zone principle began to be accepted and one local authority after another included

appropriate provisions in private Acts. Because of the activity and interest stimulated by the Society there was a rapid growth in membership. A new constitution had been devised and attendance at Conference grew from pre-war levels of one or two hundred to four hundred and then on to over eight hundred. Divisional Councils were established in most parts of the country. This growth was in full swing when in 1952 the Great London Smog, followed by the Beaver Committee, focussed attention as never before on clean air. Even then, the processes towards a legal remedy were far from swift. The excellent report of the Beaver Committee was consolidated in a Private Member's clean air Bill introduced by Gerald Nabarro, MP in 1954. MPs' support was overwhelming and the Bill was only withdrawn on the promise from the Government to put forward its own Act embodying the necessary financial provisions. In 1956, 29 years ago, the Clean Air Act was passed. I was elected as a member of Middlesbrough Council the following year. This history of the Society now becomes a little more personal!

If you had visited Teesside 150 years ago you would have found a small hamlet containing but a few houses. The main shipping port was at Yarm and later at Stockton. With the advent of the iron and steel works, Middlesbrough developed its own port — it is now the number 3 port in the country — and the town grew rapidly. William Gladstone said, "Here we see a new Hercules being born". In addition, one of the largest petrochemical and chemical complexes in Europe was established on Teesside.

Such was the growth in the area that by the late 1950s the town had the unenviable record of having the worst air pollution figures in the country outside London. At times the pollution was so great it was difficult to breathe and all around there was evidence of poor health — principally chest complaints — and the deteriorating fabric of our buildings — a state of affairs which the Council was not prepared to see continued. A 20 year programme for domestic smoke control was eventually started in 1960.

In 1958 the National Smoke Abatement Society became incorporated under its present name of National Society for Clean Air. Its work was cut out for it both nationally and locally. In the 50s and 60s there were major factors throughout the country opposing the spread of smoke control: disruptions in smokeless fuel supplies and cut-backs in local authority programmes. Using exhibitions, meetings and conferences, the Society exerted a constant pressure for progress, greatly helped by its strong local authority membership. Often it was individual Councillors or Officers whose active concern for clean air led their authority to join the Society, and who fought hardest for the cause both locally and nationally. For Middlesbrough, things did not go well in the early days. The date on which our first order was to come into operation had to be postponed for six months because the works manager failed to ensure that the necessary adaptations in the Council's own properties had been completed.

In the north we allow any officer or member one mistake, but I have to tell you I do not recall his name. You can put your own interpretation on this event!

Over the next 20 years we were to encounter a number of problems, not least being the reduced capital allocations which could have slowed down and, indeed, even stopped

our smoke control programme. This problem was most acute during the latter five years, and I had many sleepless nights thinking about how we could overcome it. It was clear to me that were we to stop the programme we would have great difficulty in getting it restarted — if at all! There is no doubt that other areas of environmental health suffered reduced resources so that this ambitious smoke control programme could be completed as a first priority. The Chief Environmental Health Officer and myself agreed that whilst we would place Orders before the Council for approval in an unmodified form, we would have a contingency plan in our back pockets — a series of mini orders. However, our luck was in and we successfully completed the programme, on time, in 1980.

Whilst all this work was going on in the domestic field, our officers continued to work alongside the Alkali Inspectorate in order to ensure that industry played its part in ridding us of the scourge we had inherited. There will be no need for me to remind you that close co-operation and liaison between the Inspectorate and local authorities has always been a key element in the national approach to air pollution control — a co-operation that common membership of the Society did much to foster.

As has been the case with so many other towns and cities, these combined efforts produced a remarkable transformation. Now we have air as clean as the best seaside resort or spa town; you can see as far as the eye will allow; our chest hospitals have become redundant and the population is generally healthy. Nowadays, flowers and trees grow in profusion throughout the city — to the extent that in 1983 we won the Britain in Bloom competition. Couple this with the fact that we won the National Tidy Town Award in 1980 and you will perhaps realise that Middlesbrough has been transformed into a most desirable place to live.

Of course, many people and many organisations have contributed to this success. In particular I should mention the Boroughs of Cleveland Pollution Control Group which, like many comparable groups, throughout the country, has enabled members and officers of all the Boroughs in Cleveland to come together to discuss trans-boundary pollution problems. Such has been the success of this group that it was highlighted by the Royal Commission on Environmental Pollution in their 10th Report as a shining example of what can be achieved by such co-operation. The Government, in its response to the 10th Report, recommends other local authorities to follow the Boroughs of Cleveland example.

What then are my conclusions from this brief review of the history of the Society and the part played by my authority in its making? Above all, the first is that, despite so many notable successes down the years, so much remains to be done.

If we have removed much of the smoke from our atmosphere, then much remains — while that from diesel engines continues to increase. If we have reduced the amount of sulphur we pump daily into our skies, we have yet to understand and come to terms with the effects of the vast tonnages we continue to pour forth. We permit NO_x and hydrocarbon emissions to increase with consequences that remain unclear. Overall, we live in a noisier, rather than a quieter environment. The list of examples is almost unending. The tragedy

of Bhopal and the potential hazard of Three Mile Island remind us that legislation is not enough. And this brings me full circle – to the original objective of the Society's founding fathers – which was to ensure that as well as possessing the essential legislative controls, the nation also had the will to enforce them. We do have the backroom staff and members of the Society with a variety of experience and expertise and I have no doubts that their enthusiasm will tackle the many tasks that we as a Society will face in the future. Thus, if we are a learned Society – pondering the issues and the means of resolving them; if we are a forward-thinking Society – encouraging research and development; and if we are a teaching body – promoting public education in all matters relating to the value and importance of clean air; my overriding conclusion is that at heart we remain what we set out to be – a pressure group! This is something that 28 years in politics has taught me to understand.

As John Ruskin once said:

"God has lent us the earth for our life. It belongs as much to those who are to come after us, as to us, and we have no right by anything we do or neglect, to involve them in any penalties or deprive them of the benefit which was in our power to bequeath".

We must not rest on our laurels; we must be ever vigilant that we do not permit the same sorts of mistakes as were made in the past to be repeated in the future; and in pressing the case for clean air, we must take to heart John Ruskin's eloquent reminder that we have the Almighty on our side!

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25 YEARS OF NOISE CONTROL IN LONDON – THE GLC's ROLE

George Vulkan

Scientific Services Branch, Greater London Council

If the question were to be asked – 'Is London quieter now than it was 25 years ago?' – it would be difficult to give a fair answer claiming success for noise control. However, there would be no lack of confidence in claiming that if it were not for noise control and preventive planning, many Londoners would now be exposed to considerably more noise than they are, and this is no doubt true of many other cities as well. Planning to prevent noise, and effective control of new developments, must now be seen as an essential element in the running of any modern city where the quality of life is considered to be important.

In London noise has long been recognised as a problem but it was not until about 1960 that serious consideration started to be given to means of controlling or reducing noise. The trigger was a proposal for a new heliport in central London, and it was then realised by the London County Council (predecessor to the Greater London Council), that in considering suitable locations, nothing was known about the extent and distribution of the existing noise climate in London. The Building Research Station was expanding its own noise interest at about this time and the opportunity was taken to join with them in carrying out the first major noise survey in any city. The 1961 – 1963 London Noise Survey covered 36 square miles with 540 points selected on a grid pattern, each being measured for 24 hours (1). The data from that survey contributed greatly to an early understanding of urban noise and provided factual material for a Government report on noise (2) in which noise levels were for the first time expressed in terms of L_{10} .

Traffic Noise

The survey clearly established the importance of traffic as the most widespread source of noise and the newly formed Noise Section in the Council's Scientific Branch concentrated initially on determining propagation patterns of traffic noise, including an assessment of the variation of noise levels with height in tall buildings, and the propagation of noise from elevated urban motorways, taking into account both distance and height (3). Extensive measurements of noise levels due to urban traffic with varying percentages of heavy commercial vehicles, and of individual vehicles helped to create a useful database on which to formulate a noise policy. The first step in this direction was a report in 1966 to the GLC (4) setting out the extent and distribution of noise sources in London, and summarising the position in a number of foreign countries and cities, where noise was also becoming increasingly recognised as a problem which could be effectively tackled. The basis for the policy, then as it is now, was that prevention is better than cure, that planning must be used to control both noise producing as well as noise sensitive uses, with these being kept apart as far as possible, and that realistic guidelines are required for the use of planners, architects and manufacturers.

The implementation of the Report meant that for example, all proposals for new roads, and all traffic management schemes in London were assessed not only for their effect on traffic movement, but also on the noise levels — this was later extended to cover air pollution from traffic as well. There is by no means an automatic balance of benefits and disbenefits to the community as a whole when traffic schemes are introduced, and objective assessments are essential if fair decisions are to be reached. Similarly, in the design of new schools and housing, noise was in many cases taken into account in the location, lay-out and design of buildings, and the Council's Architects Department introduced innovative designs for housing unavoidably located near main roads and railways due to the shortage of building land (5).

However much consideration is given to preventive planning, situations inevitably arise in densely built-up areas with high land values, where a new noise burden is imposed on existing residents. In the late 60s work was therefore started on methods of reducing noise in existing situations, including experimental work on noise barriers alongside elevated motorways (6) which demonstrated that barriers could be very effective in certain situations, and that they need be neither costly, massive nor unsightly to achieve this aim. Sound insulation of windows was always considered to be only a last resort as a method of protection, both because of its undesirability for occupants and its inability to protect gardens and open spaces. Nevertheless, considerable work has been done over the years to develop means of providing insulation and ventilation at a reasonable cost. Following pressure from the Council and other authorities, the Government in 1973 brought in the Land Compensation Act under which sound insulation had to or could be provided for dwellings affected by new or altered roads providing it could be shown that the noise level increased by at least 1 dB(A) and that the subsequent level exceeded 68 dB(A) L_{10} and that certain other conditions were met (7).

The important contribution of lorries to the capital's noise problem has long been recognised, and in 1983 the Council set up an independent Inquiry to consider various forms of lorry ban in London (8). As a result of this, a night-time and weekend ban on lorries over 16.5 tonnes was proposed by the GLC to cover the whole of London except for a few of the trunk roads. Certain vehicles were to be exempted and there has been good co-operation between manufacturers, operators and the GLC in considering the use of economically viable 'hush-kits' for such vehicles to make them environmentally more acceptable (9).

Guidelines

The need for guidelines on noise was felt at an early stage as planners and architects wanted to ensure adequate, but not excessive insulation, for dwellings and schools. Too much insulation is not only wasteful in resources with costs rising sharply at higher insulation levels, but can also be environmentally undesirable for occupants. In 1975 the Council issued a set of noise guidelines, covering various noise sources and noise sensitive uses and these have been used widely both by the GLC and many other local authorities (10). Since then some of the guidelines have been revised and a fuller revision is now being undertaken.

Sound Insulation

In 1981, a study was started, partly funded by the EEC, on the effectiveness of sound insulation in dwellings, and on the subjective reaction of occupants in dwellings newly provided with double windows (11). This was considered to be of particular importance as a reduction of external noise in terms of decibels may not be directly related to reduced noise dissatisfaction by occupants. In general, the conclusions bore out the real value of double windows, with 87% of residents expressing favourable opinions, but the effectiveness was reduced in the summer as 43% of occupants opened their windows and 30% never used the ventilation fans provided in the scheme.

Associated with the work on external noise, a study was undertaken of Acoustic Comfort (12) which also takes into account internal noise sources and sound insulation. As a result of this a modified system of acoustic comfort classification has been proposed (13). Sound insulation between dwellings has also been studied in co-operation with individual London Boroughs to establish the extent of inadequate sound insulation in new blocks of flats and a databank relating performance to construction is being compiled. Another aspect which is of practical importance in London is sound insulation between rehabilitated dwellings based on conversions in older, previously single occupancy, houses. Floor insulation proved to be a particular problem and remedial measures have been proposed (14) such as interlocking chipboard loose laid on a resilient layer, giving a loss in ceiling height of less than 30 mm, and an appreciable gain in insulation.

Aircraft and Helicopter Noise

At the time of the London Noise Survey, only about 7% of those questioned were disturbed by aircraft noise. Since then, there has of course been a substantial increase in air traffic, mostly by jet airliners, and currently there are about 275,000 air transport movements per annum at Heathrow. Neither the GLC nor the London Boroughs have direct powers to control aircraft noise but action can be taken by means of representations to the Civil Aviation Authority, the British Airports Authority, or the Government as well as by the use of planning powers by the Boroughs to control inappropriate local development and by ensuring adequate insulation where required.

The work of the Council's Scientific Services Branch has covered both these aspects. For example, when Concorde was first introduced, a survey of aircraft noise in west London was carried out and used to draw comparative noise footprints for Concorde and other aircraft under actual flying conditions (15). Other specific surveys have been used to assess the effect of route changes and changes in aircraft types. Since 1978 this has been put on a more regular basis by the establishment of a Local Authorities' Aircraft Noise Monitoring System which is used to determine the noise of both departing and landing aircraft in west London and part of northern Surrey. Information from this is used for planning purposes, to determine the amount of insulation required at certain locations, and to establish trends (16). More recently the Branch has also established an Aircraft Noiseline (17) where citizens can write or telephone their complaint about particular aircraft or helicopter noise incidents, and their complaints are forwarded to

appropriate authorities as well as being used to establish the areas, times of day and types of aircraft which give rise to the most complaints. It is intended to correlate objective and subjective data in the near future.

Helicopter noise has been a continuing, and slowly growing, cause of concern in London, and in 1973 the Council was the first authority to introduce helicopter noise guidelines which were used to limit the types able to use London's major heliport at Battersea. Conditions were imposed currently limiting the total number of movements to 12,000, of which not more than 1,500 may be by helicopters not meeting the Council's requirements for inclusion on the 'A List' (18). At the time of writing, only A List helicopters are permitted to use the floating Trig Lane Helistop on the Thames in the City itself. At present discussions on suitable noise controls for London's proposed STOLport in the Royal Group of Docks are still continuing, with the Council maintaining its views that present proposals based on the retrospective use of NNI, and ICAO noise certification points, are inappropriate and impractical for use at an urban STOLport (19).

Other Activities

In the limited space available it is not possible to cover the many other activities such as construction noise, entertainments licensing, and monitoring of pop festivals, where the Council exerts a direct influence on noise control. Another aspect of the Council's work is indirect; its role in noise control and planning in London is shared by the 32 individual London Boroughs and the City Corporation, who are the local planning authorities, and also responsible, through their Environmental Health Departments, for dealing with local noise complaints and problems. Most Boroughs have Environmental Health Officers who are specialists in noise, and have at least some noise instrumentation. The GLC recently established a new group within the Scientific Services Branch which acts as a resource centre in support of the Boroughs, and apart from having available a very large and varied selection of noise and air pollution equipment for loan, can also on request provide specialist advice and training facilities. The Branch also publishes a quarterly London Environmental Bulletin and Supplements (20).

In general, one can look back with some satisfaction on the first 25 years of noise control in London, and on the effective collaboration which now exists between the GLC and the individual Boroughs. The future however, is more doubtful, with the Government's proposals for the abolition of the GLC as from April 1986, and as yet no indication of how the service will continue to be provided in the future.

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INDUSTRIAL AIR POLLUTION CONTROL

The 1984 report of the Industrial Air Pollution Inspectorate was published 11 November 1985. Rod Perriman, who was recently appointed Chief Inspector in succession to Dr. Leslie Reed, points in his introduction to the very obvious increase in general public interest in air pollution. He highlights approval of the EC Directive on Combatting Air Pollution from Industrial Plant as possibly the most significant development in the field of industrial air pollution control during the year under review. This introduces the need for a substantially new approach to air pollution control at the local level and "ways and means" discussions among the interested parties are already well under way.

As Mr. Perriman points out, the control of industrial air pollution is attracting considerably more attention from all sides, reminiscent of the early 1970s when the Inspectorate's work was put under close scrutiny by various environmental interest groups. The Royal Commission on Environmental Pollution then took over and considered the Inspectorate's role in great detail in their 5th report, recommending then, and again in their 10th (1984) report, that the Inspectorate should be removed from HSE to the Department of the Environment. This proposal is being actively considered at the highest level within DOE and Department of Employment/HSE. Unfortunately, the DOE proposals for a comprehensive review of air pollution legislation, promised in 1984 and eagerly anticipated during 1985, are still to be published, so that the Government's intention regarding the Inspectorate's future are still unclear.

Since industrial air pollution control has been reported at both the district and national level, the "special topics" section of the Chief Inspector's report has assumed new prominence and is full of interest. In this report, chemical incineration is singled out for in-depth review, in the wake of the public and Press concern about the incineration of waste materials containing PCBs and the possible contamination of the local environment with dioxins and dibenzofurans. The report castigates the "ill-informed reporting of the subject", pointing out that the formation of dioxin from the incineration

of PCBs or any other chlorinated organic materials is favoured by low temperature and inefficient combustion, the reverse of standard practice for merchant chemical incinerators. Nevertheless, the review highlights some of the lessons learnt through painful trial and error with the present generation of incinerators, which date from the late 1960s. Hindsight, as Dr. Coleman of Re-Chem said ruefully at the recent Clean Air Conference, is a wonderful teacher. It is, for example, clear that the Industrial Air Pollution Inspectorate would never again permit such plant to be sited in valleys and close to housing.

Another interesting review is of nitrogen oxides emissions from fuel burning, concentrating on the CEEB full scale trial of low-NO_x burners on one of the 500 MW(e) boilers at Fiddlers Ferry Power Station. Developments in continuous dust emission monitors are covered in another feature, which highlights all the practical considerations to be taken into account in siting of monitors and interpretation of results. The review ends with the warning that "even after careful calibration, every monitor should be studied in order to see how it is responding to various process circumstances".

As to inspection and enforcement, the number of registrable processes under complaint rose in 1984, from 327 in 1983, to 365. The biggest single factor contributing to the increase was the unusually high number of complaints against electricity works, and most of these were put down to disruption and changes brought about because of the coal industry dispute. All power stations were affected to a greater or lesser degree and the report praises the station operating staff for managing to contain the complaint level to even that reported. The Thurrock area of Thameside suffered from acid soot deposition, probably originating from the heavy fuel oil-fired boilers of Littlebrook D Station. As coal fired stations were supplemented with oil firing, the normally tight control of air supply to the boilers could not be maintained and this sometimes resulted in complaint of intermittent dark smoke emission, and more often of conspicuous and persistent plumes because of the higher than normal concentrations of sulphur trioxide present in the waste gases.

On asbestos works, the report states that a combination of customer resistance and the desire of industry to remove asbestos from its products is gaining momentum. Several of the current registrations have developed asbestos-free substitutes and will be re-registered during 1985. Certain asbestos works were the subject of complaint because of odour emissions, caused by other materials used in the process, but on the whole the report notes the "very responsible manner" in which companies concerned responded to any notification of shortcomings. It is clear that escape of asbestos from these works to the external environment is well under control.

Mineral works continued to be the subject of the majority of complaints, but then there are more of these than of most other classes of works so that the proportion of complaint to registration is little different from average.

As an interesting sidelight to the House of Lords enquiry on the use of waste oil, it is noted in the report that 72 of the 277 roadstone coating plants using liquid fuel firing

actually used waste oil. Since lead is still added to petrol, and since waste oil is principally derived from automobile sources, a start has been made on measuring the emission of lead in the final waste gases after dust arrestment. Early indications are that the amount of lead is small and does not represent any public health hazard, but further tests are planned on a wider range of plants. Of interest to the NSCA is the note that one mineral works has been adapted to burn straw for drying the stone.

The report of the Chief Pollution Inspector for Scotland again concentrates on the controversy over chemical incineration works, focusing on the Re-Chem Plant at Bonnybridge which shut down in October. The principal difficulty at the plant, as perceived by the Inspectorate, was particulate emissions which remained to the end at an unsatisfactory level.

These reports have become more and more readable over the years and are full of interesting insights into the range of industries covered and the intelligent and sensitive approach taken by the small but highly experienced and dedicated team of inspectors who are charged with protecting the external environment by ensuring adequate control of emissions to the atmosphere. The Inspectorate continues to examine its own practices, and, even when short staffed as they were during the period under review, they kept their own activity under scrutiny by looking at the effectiveness of different approaches to inspection. As the report points out, it is very difficult today to point to positive public health benefits produced by better pollution control. Any effects on health from air pollution are likely to be chronic and long-term rather than acute, and may well be obscured by other factors such as cigarette smoking. Thus, the Inspectors have to gauge their own performance by looking at measured concentrations of pollutants in the air or, in stack gases. But, while a simple quantitative analysis of inspection effectiveness remains difficult, the review of recent efforts and achievements has led to improvements in work planning and the setting of objectives. Although in the broadest sense the NSCA continues to be deeply concerned about the framework within which IAPI operates, and remains convinced that air pollution controls should be evolved *and* enforced by people whose first business is protection of the environment within a Department of the Environment, it is good to know that these custodians of our atmosphere are watching themselves.

Industrial Air Pollution. Health and Safety 1984. Health and Safety Executive. Pub. HMSO, 1985, £5.00.

SHORT REVIEWS

Odour Nuisances and Their Control, by Denise Artis, published Shaw & Sons, Nov. 1984, £6.00.

This book is a welcome addition to the slender shelf of books on odours. Although it might soon be dated by new developments in legislation, the discussion of common law and statutory nuisance as it relates to odour control is very useful and the case histories cited will be of great help to local authorities. The sections on techniques for odour

abatement and prevention need not have been included: that area has been well covered by WSL reports. The strength of this book lies in the thorough appraisal of the law by its specialist author.

RECENT TITLES PUBLISHED BY WARREN SPRING LABORATORY

A Revised calculation of gaseous emissions from UK Motor Vehicles, by F.S.M. Rogers, Report LR 508 (AP)M; WSL, £15.00.

This report describes an improved method of deriving total emissions for gaseous pollutants from petrol engined motor vehicles in the UK. The new methodology is based on performance-related emission factors, derived from measurements made during actual journeys in the vehicle designed by the Warren Spring Laboratory team and driven on a wide variety of routes at different speeds and in different types of traffic. The performance-related emissions are compared with total emissions using fuel-related emission factors combined with national fuel consumption data, and the results are complemented by descriptions of vehicle emission legislation, a comparison with diesel total emissions, and reference to the significance of changes in instrumentation for measuring hydrocarbon emissions.

The Incineration of Municipal Refuse by P. Clayton, Report LR 498 (AP)M Sept. 1984; WSL, £12.00.

For the past decade, Warren Spring Laboratory has been involved in measuring emissions from 8 municipal incinerators. Data was collected on emissions to atmosphere of a range of pollutants, including total particles, sulphur dioxide, hydrogen chloride, heavy metals and polynuclear aromatic hydrocarbons. In addition, the fate of heavy metals, cadmium in particular, was examined.

A Dispersion Model for Deposition of Particulate Material from Straw and Stubble Burning, by A.M. Spanton, A Wilkinson and G. McInnes. Report Number LR 497 (AP)M; WSL, £12.00.

This report is a development of work carried out in 1982 which indicated the need for further investigations into the effect of the burn procedure on the production of air pollutants, their emission and deposition. Details of practical work quantifying the settling velocity of the particles are presented and the report defines the meteorological conditions most likely to occur during the burning period, and the results of applying a "tilted-plume" Gaussian dispersion model to the problem. An attempt is also made to correlate modelled depositions with those obtained in 1982.

Warren Spring Laboratory produces a quarterly Publications List which includes an order form and contains titles and brief abstracts of all new WSL reports. The list is available from: WSL, Gunnels Wood Road, Stevenage, Herts SG1 2BX. Telephone: Stevenage (0438) 313388.

DIVISIONAL NEWS

EAST MIDLANDS DIVISION

AGM *Held in the Town Hall, Mansfield, on 26 June 1985*

56 members attend the AGM. Cllr. D.C. Cruikshanks, Chairman of the Mansfield District Council, extended a Civic Welcome to the delegates. Mr. J.E. Marsh, Chairman of the Division, reminded members that Mansfield now had 33,000 premises in operative smoke control orders, and this represented three-quarters of the total premises. There had been no objection from a mineworker for eleven years. The Chairman also welcomed Mr. Max Beaumont, Chairman of the Council of the Society, to his first "away" Divisional Meeting.

The Honorary Secretary reported upon the proceedings of the Division for the past year, including the Divisional Council. On the proposition of Cllr. W. Dunn, the meeting agreed to place on record the thanks of the Division to the Honorary Secretary.

The Chairman thanked all members for their support, and particularly those who worked behind the scenes. Mr. Marsh said that Cllr. Frank Holland, who was due to succeed to the Chair, was a past Chairman of the West Derbyshire District Council. He was also a farmer and, when the Society was so concerned with matters like straw and stubble burning and the use of pesticides, it seemed very appropriate for the Division to be chaired by a practising farmer. On succeeding to the Chair, Cllr. Holland expressed thanks to the retiring Chairman for his kind words and for the efficient and business-like manner in which he had conducted the meetings. There was a very friendly atmosphere on the Divisional Council and Mr. Marsh was held in tremendous respect. Mr. Marsh had set a high standard which Cllr. Holland said he would be satisfied if he could match. Cllr. Holland also thanked his proposer and seconder on the Divisional Council.

In the absence of any other nominations, Mr. J.L. Fear was declared elected Deputy Chairman, Mr. E.F. Raven Hon Secretary/Treasurer and Mr. J.B. Sheard Hon. Auditor. One of the retiring scrutineers, Mr. F. Owen announced his impending retirement from Local Government. Mr. A. Wild and Mr. J.T. Hague were then nominated. Cllr. J.P. Chamberlain was re-elected to represent the Division on the Council of the Society for a further three years.

Report of Meeting held 19 September 1985 at Ratcliffe on Soar

Some fifty delegates assembled at the Ratcliffe on Soar Power Station by kind invitation of the Central Electricity Generating Board and were welcomed on arrival with coffee and biscuits. Commencing the meeting at 10.30 am the Divisional Chairman Councillor F.E. Holland of West Derbyshire District Council introduced Mr. G.D. Leydon Station Manager who welcomed the delegates to the Power Station

on behalf of the Central Electricity Generating Board.

Giving some information on the Power Station, Mr. Leydon said that towards the end of the 1950s demands for electrical power were doubling every ten years and a programme was commenced to bring the capacity up to meet demand. The target had been 60,000 megawatts by the mid 1970s and the demand nationally was now 47,000 megawatts so that this had not been far out. In the course of that programme 47 new 500 megawatts sets were installed. These were often installed in sets of four and Ratcliffe was a typical station.

Coal consumption was 6.5 million tonnes per year. Coal was brought in at the rate of 20,000 tonnes per day in 24 to 25 of the merry-go-round type trains which loaded and unloaded on the move and the normal stock at the start of the winter would be 1 million tonnes. The coal was conveyed through a series of bunkers to mills which ground it to pulverized fuel. The ash content is typically 16% so that there are 1 million tons of ash to be disposed of every year. Mr. Leydon then described, with the aid of a mimic chart, the process from the reception of the coal at the Power Station to the production of electricity including the cooling system and the arrangements for dealing with the ash.

Mr. Leydon was followed by Mr. A. Martin Group Leader, Environmental Research of the Regional Scientific Services Department, who commenced by showing a 35 minute film commissioned by the CEGB about acid rain. The film dealt with the whole controversy about acid rain, indicating the different arguments put forward over the years, showing how opinions have changed and examining the latest theories which have been advanced. Following the film Mr. Martin gave further details of research which was carried out. This showed that the strongest acid rain in the UK was on the outskirts of northern towns, with the largest annual value reported near Manchester Airport. In UK country districts the levels were less than near the towns, but with the highest in the eastern parts of the country, even in Scotland. Sulphur dioxide was high in the central area of England and in London and did not match the pattern of acidity. Throughout the year most acid in rain occurs in the first half and peaks in May. Sulphur dioxide and the oxides of nitrogen both peak in the winter. Ozone is more evident in the first half of the year and also peaks in May. Examination of pollution in towns shows oxides of nitrogen to be very high, oxides of sulphur rather less, and ozone low. About 30 kilometers out, there is more ozone and less sulphur dioxide and oxides of nitrogen, and at 70 kilometres out there is even more ozone and less and less sulphur dioxide and oxides of nitrogen. Long term measurements of acidity at two UK sites showed large year-to-year fluctuations but no trend except that the Northern one showed a step up in the late 1960s, and a similar step was detected in Norway in 1964. The University of East Anglia had examined patterns of winds bringing rain and had noted a change in the pattern dating from the early 1960s with more trajectories over large industrial areas and towns in Europe since then. Sulphur dioxide production in the UK peaked around 1970 and has since fallen by 40% but oxides of nitrogen are still increasing. In Germany, measurements showed that ozone was rising steadily and in line with the number of cars, which now total 28 million. Also in Germany there are said to be 4 times as many cars per mile as in the UK. Ozone figures in Germany were twice as high as in the central sites in the UK.

Mr. Martin explained that ozone has the effect of weakening the structure of pine needles so that certain nutrients are washed away and the tree becomes susceptible to other stresses including insects, droughts, frosts and acid mists. Reports from Germany state that in Czechoslovakia a virus spread by a common edible fungus has been identified as something to which affected trees may also be susceptible.

In Switzerland it has been found that trees are now affected and dying for some distances around the entrances to vents from the major motorway tunnels and this is causing anxiety because it may increase the risk of avalanches. By 1987 all vehicles in Switzerland must meet vehicle emission controls. All member countries of the EEC have accepted the principle of more stringent control of vehicle emissions, but Switzerland will be the first country in Europe to fully implement this, by introducing a requirement for 3-way catalytic convertors.

In the course of answering questions, Mr. Martin said that there was evidence from Germany that attack on stonework was due to local sulphur dioxide gas rather than acid rain. There was evidence from sediments in lakes in Scotland that the acid problem there commenced 150 years ago. In Germany silver fir was affected as long as 30 years ago. Present concern is directed at the number of types of trees being affected by the new type of damage and there is now some suspicion that even beech may be the subject of attack. Whilst traffic densities were less in Sweden and Norway it needed to be borne in mind that ozone was produced not only from car exhausts but also from the exhausts of boats and aircraft. Asked to explain the process of fluidized bed combustion, Mr. Martin said that it consisted of a bed of sand which was lifted with air and as a result powdered coal burnt on it at a much lower temperature, namely 850 degrees centigrade, as opposed to 1400 degrees centigrade in the normal combustion process. Because of the lower temperature less nitrogen from the air was fixed as oxides of nitrogen. If limestone was introduced into high temperature combustion a "dead burn" resulted but at 850 degrees centigrade it would react and trap some sulphur dioxide in the ash. This process was being developed at Grimethorpe and showed great promise, giving potential reductions of 80% in oxides of nitrogen and 50% in sulphur dioxide.

Mr. Martin was followed by Mr. O'Keeffe, Section Head Plant Testing, who spoke briefly about the statutory environmental obligations of the Central Electricity Generating Board and said that the two main emissions were water vapour plumes from cooling towers and gases and particles from chimneys. The cooling tower was hyperbolic in shape and its structure was extremely thin.

Referring to the problem of legionella, Mr. O'Keeffe said that in the recent outbreaks all but 2 of the 41 deaths at the hospital in question were associated with the hospital itself. Legionella was found in all natural water sources but the numbers were too low for concern. A survey had showed that there was no danger from power stations and that the highest levels were still less than required to cause infection. High oxygen and chlorine concentrations were alien to bacterial growth and frequently the organisms measured in the cooling towers were less than in the incoming water. Additionally, legionella requires warm water and a residence time of one to two days to multiply. In

the cooling tower the water was only in the stream for 10 minutes. Mr. O'Keeffe then dealt with dust and gases and described the working of an electrostatic precipitator. Mr. O'Keeffe also detailed the dust emission standard which the CEEB set out to achieve and their relationship with the Industrial Air Pollution Inspectorate. In relation to the size of the industry complaints were very small and many of these related to start-up operations. There had been no complaint at Ratcliffe for the past 2 years.

This concluded the morning session and the Chairman thanked all the speakers for their extremely interesting contributions and for answering questions put to them.

During the afternoon the delegates were taken in a number of parties round the power station itself and this tour was conducted by several lady guides who explained the functions of the various parts of the station. At the conclusion of the tour tea and biscuits were served in the reception room and a further word of thanks was voiced by the Chairman prior to dispersal.

The Division is indeed indebted to the Central Electricity Generating Board and to all of the members of its staff who were involved in arranging and conducting this most interesting visit.

E.F. Raven
Hon. Secretary

LONDON, SOUTH EAST and CENTRAL SOUTHERN DIVISION

Report of the AGM

The 30th Annual General Meeting of the Division was held on Tuesday, June 11th 1985 at Hobart House, HQ of the National Coal Board in London. 26 delegates were in attendance. The Chairman, Mrs. G. Naylor, welcomed the Secretary General Air Commodore John Langston CBE and members of the Division. After the business of the meeting the Division was addressed by Mr. Jean-Pierre Pirault, Manager, Technical Research Car Engineering of the Ford Motor Company, on the subject of the "Lean Burn Engine" and its role in reducing motor vehicle pollution.

Visits had been made, or were planned, to:

- GLC Incinerator Edmonton on 18th July 1985;
- The Thames Flood Barrier at Woolwich 11th September 1985 (see report below);
- The Ford Motor Company Research Establishment at Laindon, Essex, on 18th September 1985.

All visits had a technical content and were extremely interesting and informative. The Chairman thanked all members of the Division for their support during the year and welcomed new members. Thanks were also extended to the National Coal Board for the use of their premises as venue for Divisional Meetings held during the year.

J.J. Beagle
Hon. Secretary

LONDON, SOUTH EAST and CENTRAL SOUTHERN DIVISION

Visit to the Thames Barrier

On 11 September fifty-two members of the Division visited the Thames Barrier that spans the River Thames in Woolwich Reach. The party was welcomed by Mr Ray Horner, the GLC Project Manager since the inception of the idea back in the 1970s.

The need for a barrier or barrage to protect the lives of those who lived or worked on the banks of the River had been discussed for many years. The Waverley Committee, appointed by the Government following the floods of 1953, reported in 1954 on the causes of the flooding and made recommendations on what should be done to safeguard the 350,000 homes and the lives of 1.2 million people living in them. Within two months the Thames Technical Panel was set up and after much deliberation and many more Committees a site was selected in Woolwich Reach for a flood barrier.



Mr. Horner showed the party a film that had been made to illustrate the history and development of the Project. The party was then conducted below river bed level through the tunnel that runs from one bank to the other through what seemed to be miles of intricate machinery and endless stairways!

The barrier comprises four main navigation openings 200 feet wide with rising sector gates with a further two 100 feet navigation openings with rising sector gates, one to the

north of the main openings and one to the south for use by smaller vessels. To allow free flow of the tide through the structure four more openings of 100 feet are provided, fitted with a simpler form of gate — the falling radial gate. All gates are operated from the Control Tower on the south bank.

Work started in January 1975 and was completed and ready for action in October 1982. The construction costs totalled £440 million (or £110.7 million at October 1973 prices). The increase of £329.3 million is represented by 70% for inflation, 5% for refinement of design, 10% construction difficulties and 15% low productivity.

At the end of the visit Mr Horner answered members' questions arising out of the visit and the Chairman of the Division, Mrs Naylor, proposed a vote of thanks to Mr Horner for his absorbing description of the Barrier and its workings and especially for giving up his afternoon to provide the Division with a most interesting and instructive visit.

J. Clancey

FUTURE EVENTS

1986

19 FEBRUARY — ONE-DAY CONFERENCE "Improving Sound Insulation in Existing Buildings"

Organisers: Institute of Acoustics

Fee: £60 + VAT (reduced fee for IOA, RIBA, IBCO & IAAS members)

Details: Dr. J.P. Roberts MIOA, Institute of Environmental Engineering, Polytechnic of the South Bank, Borough Road, London SE1 0AA. Tel: 01-928 8989.

25 MARCH — ONE-DAY MEETING "Recent Developments in the Active Control of Noise and Vibration"

Organisers: Institute of Acoustics

To be held at: ISVR, University of Southampton

Further details: IoA, 25 Chambers Street, Edinburgh EH1 1HU. Tel: 031-225 2143

26 and 27 MARCH — WORKSHOP "Asbestos — Policies for the Future"

Organisers: National Society for Clean Air

To be held at: University of Newcastle upon Tyne

Fees: Residential: £139.00 + VAT; non-residential £105 + VAT (non members)

Residential: £124.00 + VAT; non-residential £89 + VAT (members NSCA)

14 papers are to be presented on: health risks; monitoring and identification of fibres; HSE licensing and enforcement; removal — techniques and case histories; dealing with public concern; action guidelines. The programme is designed principally for those with a professional interest in the subject, in local authorities and in industry.

Further details: NSCA, 136 North Street, Brighton BN1 1RG. Tel: 0273 26313.

7 - 10 APRIL — CONFERENCE "Acoustics '86" — Spring Conference of the Institute of Acoustics

To be held at: University of Salford

Technical sessions will cover: noise control; underwater acoustics; physical acoustics; building acoustics.

Further details: IoA, 25 Chambers Street, Edinburgh, Tel: 031-225 2143

7 - 11 JULY — INTERNATIONAL SYMPOSIUM "Highway Pollution"

This will be the 2nd international symposium held under this title; the aim is to provide a forum for recent research work in the interdisciplinary field of atmospheric, surface and water pollution, arising from the use of highways.

Topics to be covered include: atmospheric dispersion and emission; vehicle emissions; noise; studies of specific pollutants; effects; highway runoff and hydrology; controls, legislation and policy.

Fee: £100 (a limited number of student places are available at the special rate of £40)

Details: Dr. Ron Hamilton, School of Applied Science, Middlesex Polytechnic, Queensway, Enfield, Middlesex EN3 4SF.

7 - 10 OCTOBER — INTERNATIONAL CONGRESS "Traffic Noise and Urban Planning" 14th AICB Congress

Organisers: Association Internationale contre le Bruit

To be held in: Basle, Switzerland.

Further details will be available from NSCA at a later date.

27 - 30 OCTOBER — 53rd CLEAN AIR CONFERENCE

To be held in: The Empress Hall, Winter Gardens, Blackpool

Organisers: National Society for Clean Air

19 - 21 NOVEMBER — INTERNATIONAL CONFERENCE "Envirosoft 86"

Organisers: Computational Mechanics International, Southampton, UK

To be held in: Los Angeles, USA

The organisers have issued a first announcement and Call for Papers, for this international conference on the development and application of computer techniques to environmental studies. 300 word abstracts are required by 1 March 1986.

Details: Computational Mechanics International, 52 Henstead Road, Southampton SO1 2DD, UK. Tel: 44 (0) 703 221398

26 NOVEMBER - 5 DECEMBER — INTERNATIONAL EXHIBITION "Means of Automation and Control over the State of Nature and Sources of its Pollution"

Organisers: The USSR Chamber of Commerce and Industry, V/O "Expocentre"

To be held: Moscow, USSR

Wide ranging themes: details from the Editor, *Clean Air*.

Rates: closed exhibition space — 30.00 rbls per m³

open-air exhibition space — 12.00 rbls per m³

Further details and application form: V/O "Expocentr", ENVIRONMENT CONTROL '86, Sokolnitchesky vak, 1a, Moscow 107113, USSR. Telex: 411185, 411948 EXPO SU.

REPORT ON 52nd CLEAN AIR CONFERENCE

by
Jane Dunmore

Update on Acid Rain

The good news is that UK research is coming up with some interesting results on the "acid rain" phenomena; the next step is to persuade the policy makers to take note and act accordingly. The first full session at the 52nd Annual Clean Air Conference, held 14–17 October in Scarborough, looked at acid rain from the UK perspective and covered evidence implicating UK emissions in damage to the ecology here and abroad, research into stonework damage and the current government position.

Dr. Barry Smith of the Meteorological Office presented his findings on the vexed question of proportionality between emissions and depositions. He concluded that at short distances, within the UK itself for example, emissions and dry depositions are not in proportion; but at longer distances time and space act to balance out the relationship between emissions and wet depositions. He believed that while the short term severe pollution episodes might produce significant ecological damage in sensitive areas of Scandinavia, they would not respond to a change in emissions. On the other hand, the overall longer term deposition would respond proportionally. These findings will fuel the Scandinavian demand for a more positive emission control commitment by the UK: according to Dr. Smith's own figures, the UK contribution to wet depositions of sulphate is about 25–30% of the total for the most badly afflicted parts of Southern Norway.

Dr. Heather Viles of University College proved a most able stand-in for Dr. Butlin of the Building Research Establishment when she presented his paper on the effects of acid deposition on UK buildings, elaborating on her own work into stone damage. Many of Britain's best loved buildings are built of vulnerable calcareous stones such as the limestone used for St. Paul's Cathedral. The BRE team has been comparing erosion rates now and in the past and have come up with some interesting comparative figures: a long term erosion rate of 0.078 mm a year, with a slightly lower short term rate of 0.062 mm a year (although these studies were generally done at less exposed sites). The researchers have also compared the rate of erosion of stone tablets exposed in London with those subjected to weathering in a rural area, and found that the erosion rate measured by weight loss of the stone tablet is 25% higher in London. Clearly, atmospheric pollution is damaging buildings above and beyond what normally occurs through wind, rain and other weathering.

The DOE has become skilled at massaging figures in support of the Government's opposition to flue gas desulphurisation or other positive steps to control acid deposition. **Peter Burgess** from the Department of the Environment used a number of statistics — eg, the falling trend in UK emissions and rising trend in Eastern Bloc emissions — to show why the UK should not plunge rashly in to support the 30% club, let alone commit itself to the large combustion plant draft

Directive. But later in the Conference, **David Cope** of the IER's Coal Research Unit demonstrated that the draft Directive is fait accompli in parts of Europe, with countries such as West Germany and Austria going well beyond the terms proposed.

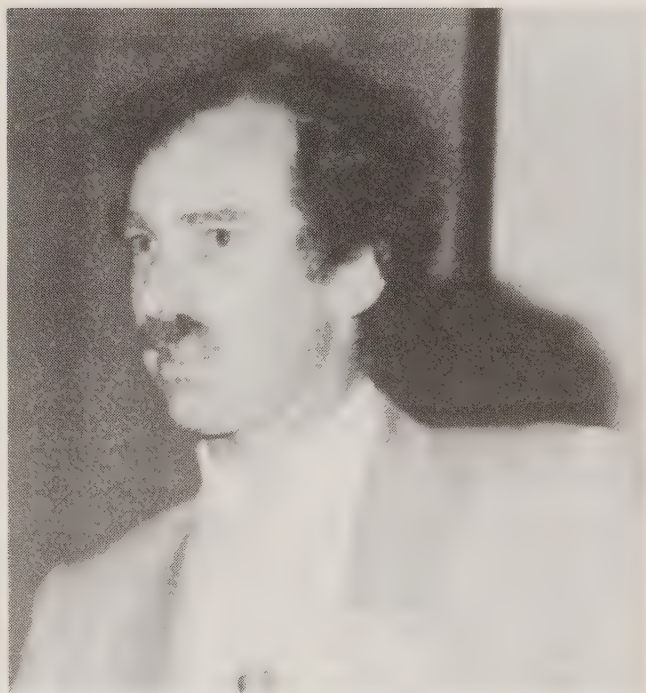


Delegates at the 52nd Clean Air Conference

The debate on acid rain stimulated one delegate to propose from the floor a resolution calling for increased UK acid rain research effort, and for the government to report annually to Parliament what progress it was making under the UN ECE Convention on long range transport of air pollution and other such international agreements. This resolution — quite in line with NSCA policy — was later carried unanimously along with another calling for the excellent air pollution and noise research work undertaken by the GLC and Metropolitan County authorities to be continued by keeping the scientific support services intact.

Lively noise session

Other sessions at Conference were characterised by excellent presentations



David Cope speaking in Session 6

from the invited speakers and a good deal of interested questioning from delegates. The session on Noise provoked the greatest number of contributions from the floor, particularly on the subject of noise and health (following presentation of the paper by **Dr. John Langdon**). Dr. Langdon had dealt with hearing impairment and some of its consequences, effects of noise on mental and physical health, and on sleep. He reviewed the research that had been conducted in these various areas, drawing a distinction between carefully designed studies, the findings of which could be relied upon, and the less rigorously conducted research. It was clear that some delegates considered that he had downplayed the impact of environmental noise on health, a view which Dr. Langdon was at pains to refute. Indeed, he expressed the belief that as noise controls were being applied far more vigorously within industry, the main danger to hearing in the future would increasingly be environmental noise, for which there is as yet no conservation programme.

Mike Gittins of Leeds City Council elaborated on this theme in his presentation on entertainment noise. He argued for a uniform policy to be applied to entertainment noise in order to protect those who are especially susceptible to hearing damage, through exposure from a number of sources. He also called on local authorities to ensure that adequate controls are introduced at all events held on their own premises. His views were generally warmly supported from the floor, with additional pleas being made for an enhanced educational effort directed in particular at young people. In this context, **Mr. John Evans** (who serves on the NSCA's Noise Committee) mentioned the preparation of a teaching pack on noise, which the NSCA hoped to publish, with the aid of sponsorship, in 1986.

Mike Smith of Rolls Royce Limited, a specialist in aircraft noise control, looked at the prospects in this area into the 21st century. After 25 years of commercial jet travel, technological advances have made possible the introduction of a quieter generation of engines. Although these have yet to come into service on a substantial scale, there is a feeling in many quarters that the airport noise problem will soon be laid to rest. Mr. Smith questioned the validity of this belief and discussed a number of factors that could undermine it, including the possibility that airline growth in the 1990s would destroy the benefits gained through improving technology. On the other side of the coin, he emphasised that the continuing pressure for yet further improvements in noise levels often ignored the many years that it took from the design of new aircraft to new standards until they were introduced on a wide scale. Legislators had to under-

stand the lead time required to effect improvements, and to realise that drastic changes could not be proposed before the current generation of quieter jets had been introduced and had a use in service. On the positive side, Mike Smith put forward the view that the UK's capacity to pursue noise research should be exploited to ensure a quieter and healthier future, rather than sacrificed as a short-term expedient in a recessionary period.

Hazardous waste incineration

Dr. Arthur Coleman of Re-Chem must have known that following all the public controversy about the incineration of hazardous waste and the Re-Chem plants' operations in Scotland and South Wales, he would be subjected to lively questions from the floor. He was not disappointed, but his presentation was so frank that it disarmed any ill-founded criticism. When the Chief Industrial Air Pollution Inspector reviewed the whole question of hazardous waste in his latest report (see this issue, page 129) he drew some lessons from past experience, and Dr. Coleman, too, acknowledged that hindsight was a great teacher. With hindsight, his own company might have changed its approach to coping with public and media concern earlier, although he was strong in defence of the technical solutions adopted by his company. Delegates who had personal experience of the plants, such as **Terry Jones** from Torfaen BC, and **Geoff Charnley** of Southampton City Council, asked particularly pertinent questions about future plans of the Company, reflecting the concern of residents around the respective plants.

Fuel/energy technology developments

Interesting new technical developments were revealed in the presentation by **Roger Payne** on small automatic coal fired boilers, and in the discussion on the use of waste as fuel. The Coal Research Establishment has worked together with boiler manufacturers to produce designs aimed at the commercial and large domestic market sector. These are intended to be very competitive with oil fired systems in terms of significantly reduced operating costs and an equivalent level of automatic operation. A special service scheme is to be introduced in support of the boilers, and altogether the development will mean that solid fuel can be used almost as if it was "on tap".

As to refuse derived fuel, **Mr. Jackson** of Warren Spring Laboratory and **William Hall** of National Smokeless Fuels Limited described the recent research and development work undertaken to exploit the use of waste material as a source of energy. On the solid waste side, Mr. Jackson established that RDF is a viable alternative to industrial fuel. The remaining question marks are over some aspects of combustion and in particular the emission levels. Warren Spring Laboratory are planning further long-term trials in order to define possible problems, particularly if more stringent legislation on the lines proposed by the Federal Republic of Germany is introduced.

Extracting and using methane from landfill sites could be regarded, in the words of **Dr. Frank Shephard** of British Gas, as making a virtue out of a necessity. In the United States such fuel is fed into the natural gas supply system and has become very commercially viable.

In the UK there are some hurdles still to be overcome, but landfill site owners and operators are increasingly aware of the potential to be gained from what is to them initially a problem. The National Coal Board (CP) has evolved a substantial range of gas management techniques and methane gas is now being recovered for commercial utilisation as a fuel or energy source at several sites, some very small scale but with the largest producing 30,000 tonnes of coal equivalent per year.

There was a substantial degree of interest shown in the waste-as-fuel developments by local authority delegates, who are always keen to exploit new techniques to the benefit of the environment and the promotion of industry and jobs in their area.

Future of air pollution control

More useful advice on how to ensure that environmental protection does not decline in a cut-back economy was provided by **David Shillito**, a consultant and Director of Cremer and Warner. He argued the case for the use of consultants as a sensitive go-between when industry and local authority are negotiating on controls to be applied, especially on new developments.

Peter Horan and **Dr. R.S. Barrett** of NIFES examined the control of particulate emissions, in the light of EC proposals to set much more stringent emission standards. These standards could involve plant operators in significant expenditure and should entail a great deal more testing of emissions to ensure compliance with the internally agreed limits. At present, policy in the UK is to carry out measurements only

when there are complaints from the public drawing attention to a problem plant; even at that stage, costly and time-consuming measurements are a last resort. The lack of such measurements has been strongly criticised in some quarters within the NSCA, so this paper was considered a welcome contribution to the debate, in particular for drawing attention to the practical difficulties associated with the isokinetic measurement method.

Indoor air pollution

The final session at Conference dealt with possibly the most controversial subjects — radon in houses and asbestos removal procedures. **Dr. Anthony Wrixon** of the National Radiological Protection Board announced the provisional results of the NRPB's nationwide survey into the naturally-occurring radon gas in houses. He revealed that radon is the most significant source of radiation exposure in the country and that there are marked regional variations. About 90% of the average radiation dose in the UK is caused by natural sources — cosmic rays, gamma rays, radioactivity in diet and radon in air. The radon gas is created by the trace quantities of uranium in the ground and in building materials. It moves through rock and soil or brick and concrete and enters the atmosphere. While levels in outdoor air are low, the radon accumulates indoors because of restricted ventilation. The radon gas decays into solid products which are also radioactive and which attach themselves to dust particles in the air. When inhaled, these irradiate the lung. Since 1983 the NRPB has conducted a national survey of radon in dwellings and several smaller studies in regions where levels were

expected to be above the national average — for example, Aberdeen and Cornwall. In such granite areas uranium quantities are usually higher than average.

The results presented by Dr. Wrixon show that concentrations of radon in London are about half the average value, in eastern England about average, but in south west England they are roughly three times the average. The highest regional levels were found in Cornwall where typical values were around ten times the national average and specific values over ten times higher still. Elevated levels were also found in Devon and in the Pennine region. Contrary to expectation, levels in Aberdeen were below the national average, probably because of the type of granite and local building practices. While there is no direct evidence that exposure to radon decay products in the home can cause harm to human beings, evidence from studies of uranium miners and other miners exposed to high levels of radon underground shows that lung cancer might be produced. Extrapolating these results, there could be some 300 cases of lung cancer a year due to exposures from indoor sources. The NRPB is therefore working with the Building Research Establishment to develop methods for reducing radon levels and they are considering whether remedial action should be applied to some existing dwellings, and preventative action considered for new buildings in some regions.

As to asbestos, it was the practical problems involved in stripping out a potentially lethal substance which stimulated most questioning, although under-

lying both the presentation by **David Durston** and many of the questions from the floor was the dilemma of whether or not to strip out asbestos in the first place. This is a hotly debated subject, on which people hold strong views and about which councils have taken different policy decisions. The consensus at Conference and within the NSCA is that removal should be regarded as essential when material is damaged and thus in a dangerous state, and encapsulation is impractical. This whole question will be debated in far greater detail at the **Spring Workshop** to be held in Newcastle upon Tyne, 26 and 27 March 1986. Of particular interest will be the case histories which are to be presented then.

Social events

Clean air delegates always demand a detailed programme with a high technical content, which meets the requirements of both the local authority and industrial sector both of which have sustained a remarkably steady level of support for the Conference in recent years. Nevertheless, some light relief is needed after all the working sessions, and this year the entertainment on offer was particularly good. The Scarborough Borough Council generously hosted a gala evening at the Spa Theatre, when a variety show of musical and comedy acts was presented.

The NSCA's own conference party had the usual dancing, a frenetic Irish comedian and an exceedingly clever illusionist and magician. The good company was the audience's own contribution and what more could you ask than a chance to relax with old friends after a hard day's work?



Delegates relaxing at the Conference Party

New President for NSCA

As to NSCA matters, the Conference was notable as the occasion of the induction of a new President of the Society. Councillor Len Poole is only the second elected member of a council to have been honoured in this way, and his Presidential Address took as its theme the hand-in-hand development of local authority control of emissions with the growth in the Society and its range of activities. The text of Cllr. Poole's address is published on page 119 of this issue. The Society's Council had its usual meeting just before Conference, at which Mr. R.W.C. (Bill) Wheatley of the National Coal Board was elected to succeed Max Beaumont.



Max Beaumont congratulating his successor as Chairman of Council, Bill Wheatley

UPDATE

WASTE MANAGEMENT — 11th RCEP REPORT

The Royal Commission on Environmental Pollution published its 11th Report, entitled "Managing Waste: The Duty of Care", on 5th December 1985. This is the last report to be produced under the chairmanship of Sir Richard Southwood, and in many respects it consolidates the extremely useful work of the Commission under his leadership. It also makes, or reiterates, many important points of interest to this Society. Among welcome restatements are the calls for a ban to be introduced on strawburning (but with this to be extended to include the burning of all field crop residues) and for the Industrial Air Pollution Inspectorate to be returned to the Department of the Environment where it should form the nucleus of a unified pollution inspectorate.

Throughout the report there is a concern to achieve higher standards in waste management and pollution control generally, by encouraging industry to become ever more responsible, promoting and developing a unified approach to pollution control, and increasing fines for polluting the environment. The concept of BPEO is rightly developed in this report, since the disposal of waste can affect many environmental media: incineration, leading to air pollution; landfill, leading to land and water pollution; and disposal at sea with its consequences for marine life.

The report ranges over a very wide area

of responsibility as it covers the management of wastes from the small scale of litter, through household and commercial wastes, to the special and hazardous wastes. This brief review will not attempt to cover the whole scope of the report, but will concentrate instead on the discussion of issues which have particularly concerned the Society, and the Commission's recommendations in those areas.

Strawburning

The Commission repeat the concern expressed in their 10th report, making good use of evidence which has come forward since then, such as the NSCA survey and the work of Warren Spring Laboratory which has enabled the production of total black smoke to be quantified at 18,000 tonnes. The Commission state firmly, "We believe that this is an unacceptable and avoidable source of pollution which should be eliminated as soon as possible".

Incineration

In a welcome endorsement of NSCA and IEHO opinion, the Commission have recommended that Crown immunity should cease to apply to the National Health Service and that incineration and other waste disposal facilities operated by or on behalf of the NHS should be subject to exactly the same controls and standards as similar facilities operated by other organisations. Crown immunity has been a thorn in the side of environmental health departments for years,

particularly when black smoke emissions from hospital incinerators have caused flagrant nuisance and distress to nearby residents. The removal of the immunity is long overdue.

As to hazardous waste, the Commission have outlined in the report what they consider to be the requirements for incineration of toxic industrial waste. They expressed concern that there may soon be insufficient and inadequately distributed merchant incinerator capacity in the UK, a concern shared by members of this Society (for example, see last issue of *Clean Air*, page 101).

The report recommends the establishment of standards for the operation of incineration plant. The Commission suggests that the chemical industry should take more responsibility for the final disposal of its own wastes in an environmentally acceptable manner, paying the proper cost. This would go some way towards meeting the complaints of those in the disposal industry that the highest possible technical standards are not affordable unless the polluters — the producers of the waste — pick up more of the tab.

Waste as fuel

Another point of interest is the recommendation on combustion of waste derived fuel: that it should only be burnt in units where good control can achieve high temperatures, with good oxygen mixing and sufficient residence times. RDF is *not* suitable for burning on domestic grates!

The conclusion on waste oils is slightly tentative. "There may be a continued

risk of air pollution arising from the burning of waste oils with inappropriate equipment". The burning of contaminated waste oils is widespread in parts of the UK, especially in the West Midlands, and here the Commission appear to understate the case.

Altogether, though, this is a worthy report full of excellent information and analysis which will add greatly to the general understanding of waste management and should give considerable assistance to those charged with this task.

RCEP, 11th Report. Managing Waste: The Duty of Care. pub. HMSO, Dec. 1985, £12.50.

ACID RAIN TREE SURVEY — FIRST RESULTS

Friends of the Earth have reported the initial results of the yew and beech tree acid rain survey. Up to 18th September records were received from 153 sites in 32 countries of England, Scotland and Wales, 79 with beech and 74 with yew. Acid rain dieback symptoms were recorded in every county. Of 380 beech trees surveyed 35% showed no dieback, 50% showed partial dieback, 13% showed advanced dieback and 2% showed complete dieback. In yew the figures from the 262 individual trees surveyed were 28% healthy, 41% partial dieback, 29% advanced and 2% complete.

FOE consider these figures to be comparable with the situation in large areas of Europe, and that in the worst areas of Germany some five or six years ago. A spokesman said, "Individual examination of trees suggests the yew symptoms

appeared here up to 7 years ago but mainly less than 4 years ago while beech symptoms are up to 15 years old. The decline has been overlooked on a national scale. It is very worrying that damage is found across the country on a wide variety of soil types and topographies. This too is consistent with the Continental situation. We think it shows acid rain damage has definitely arrived in Britain".

ENVIRONMENTAL PROTECTION TECHNOLOGY TRADE FAIR

Government and industry are to work together to boost Britain's share of the new markets offered by environment protection, Environment Minister William Waldegrave has announced.

Mr. Waldegrave met representatives of trade associations and companies involved in the production of pollution abatement technology, together with the Department of Trade, the CBI and the Royal Society of Arts, to discuss the possibility of a major new exhibition of British environmental technology in the UK in European Year of the Environment, March 1987 to March 1988. EPEMA was represented at the meeting by Mr. Max Beaumont, of F.E. Beaumont Ltd. The Environment Minister explained that the aim is to secure greater recognition of both the contribution of industry to environmental protection, and the opportunities for industry in the environmental protection market.

He said, "An international pollution abatement trade fair in the UK during European Year of the Environment would provide an excellent opportunity

for British companies to demonstrate their lead in many areas of abatement technology and explore new markets for their products. I am clear that this would have to be a fully commercial venture, but one that we would have great interest in, not least as a potential exhibitor".

Mr Waldegrave was seeking views on the desirability of such a fair and its possible shape. Participants at the meeting agreed to form a steering group to investigate the possibilities in more detail and bring forward proposals for action.

INDUSTRY: CARING FOR THE ENVIRONMENT

As part of the Industry Year 1986 campaign, the RSA's Committee for the Environment is inviting British firms to submit case studies on how their work is enhancing the environment.

Case studies of good practice are being sought in all facets of the environment, e.g. planning, transport, land use, pollution, energy and waste disposal. The Committee will especially be looking for examples of environmental responsibility which can save or make money.

Many case studies will be publicly highlighted at an RSA national conference in April 1986, and in a subsequent booklet.

The Committee for the Environment which was formed in 1971 at the instigation of HRH The Duke of Edinburgh, seeks to identify and anticipate major environmental problems and provides a forum for discussion by a wide range of interests.

RESPIRATORY PROTECTIVE EQUIPMENT (RPE) FOR USE AGAINST ASBESTOS

A Guidance Note (No EH41) has been published on "Respiratory protective equipment for use against asbestos". It was prepared after consultation with the Health and Safety Commission's Asbestos Manufacturing Industry Working Group and Construction Industry Advisory Committee and also the Respirator Committee of the Industrial Safety (Protective Equipment) Manufacturers' Association.

The Asbestos Regulations of 1969 require the use of exhaust ventilation to prevent asbestos dust entering the air of the workplace. If exhaust ventilation is impracticable, the Regulations require the provision of RPE. RPE is necessary during asbestos stripping and in certain asbestos textile processes. In such cases the Regulations lay down that RPE of an approved type must be provided and worn.

There is a wide range of RPE available, which has been approved for use against asbestos. A list of such equipment is issued annually by the Health and Safety Executive as Form F 2486, which is available from HM Stationery Office. The purpose of Guidance Note EH41 is to give practical advice, which will help employers to select the correct respirators for the job and ensure that these are properly used and maintained.

HSE has also published two RPE training packages, which have been produced jointly by the Institute for Consumer Ergonomics (ICE), Loughborough and HSE. These are entitled "Training in the use of RPE in the Asbestos Manufactur-

ing Industry" and "Training in the use of RPE for Asbestos Insulation Removal". Both packages include audio/visual modules for training managers and operatives in the general principles of using RPE and separate modules concerning the correct use of each class of respirator commonly used in the asbestos industry. Copies of the RPE training packages can be bought or hired from CFL Vision, Chalfont Grove, Gerrards Cross, Bucks SL9 8TN, Tel: Chalfont St Giles (024 07) 4433. Prices on application.

RIVER WATER QUALITY SURVEY

The Government is to undertake major surveys of UK river water quality, Environment Minister William Waldegrave announced in the House of Commons in November 1985.

The River Quality Surveys will provide a picture of the current state of rivers, and help identify priorities for future action. Successive surveys since 1958 have shown a steady improvement in the quality of UK rivers, canals and estuaries.

ASBESTOS IN BRAKE LININGS

HSE has issued a warning to garage workers about asbestos dust in the air in garages. The dangerous jobs are identified as follows: cleaning brake assemblies, cleaning clutch housings, grinding brake linings, drilling brake linings, and sweeping floors after these operations.

Free posters and pocket cards are being distributed to mechanics and fitters,

alerting them to the dangers and to the precautions that should be taken.

Both the card and poster stress the importance of safe systems of work and the adoption of practical precautions. A Garage Workers' Asbestos Code — nine dos and don'ts — provides easy-to-follow advice to ensure a reduction of potentially dangerous asbestos dust in the air in garages.

CONTROL OF LEAD AT WORK — REVISED CODE OF PRACTICE

The Health and Safety Commission has published a revision of the Approved Code of Practice made under the Control of Lead at Work Regulations 1980.

The revision implements the changes in current UK practice required by a European Community Directive on the protection of workers from the risks associated with exposure to metallic lead and its ionic compounds at work (82/605/EEC), which was adopted by the Community on 28 July 1982 and has to be implemented by Member States by 1 January 1986.

Most of the Directive's requirements have been in force in the UK since 1981, when the Control of Lead at Work Regulations came into effect, but the revised Code introduces some minor changes. These include revisions to ensure that

- information on air sampling results which show high lead-in-air levels is given to employees quickly;
- proper controls are applied when incidents give rise to increased exposure to lead;

- employers specify the type of respiratory protection to be worn if exposure cannot be properly controlled by other means;
- employees found to have levels of lead in their blood greater than 70 μ g/100ml) are withdrawn from work with lead (previously the level was 80 μ g/100 ml).

There are also changes relating to the procedures for monitoring lead-in-air levels and for the medical supervision of employees working with lead.

The revised Approved Code of Practice applies as from 1 January 1986.

GOOD NEWS

Derby Borough Council has completed its Smoke Control Programme, with effect from 1 October 1985. 79,770 dwellings, and 90,233 premises in total, are now subject to smoke control. The NSCA's President, Cllr. Len Poole, attended a function to mark the event and expressed the warmest congratulations of the Society to the Derby Borough Council for its achievement.

CORRECTIONS

A few gremlins in the last issue of *Clean Air*: the source quotations at the bottom of pages 94 and 102 should be transposed, and on page 101, last para, line 7 "transformation of waste" should read "transportation of waste".

IN PARLIAMENT

Elected NSCA Vice President at the Society's AGM in October 1985, Gareth Wardell MP has already raised one of the NSCA's foremost concerns in the House of Commons:

2 DECEMBER 1985 *Written Answers*

Industrial Air Pollution Inspectorate

Mr. Gareth Wardell asked the Prime Minister if she has any plans to transfer Her Majesty's industrial air pollution inspectorate to the Department of the Environment, and if she will make a statement.

The Prime Minister: No, but working arrangements in this and related areas are under review.

(Hansard)

Other recent Commons Questions

4 DECEMBER 1985 *Written Answers*

Council of Environment Ministers

26 Mr. Wallace asked the Secretary of State for the Environment if he will make a statement on the November meeting of the European Economic Community Council of Environment Ministers.

Mr. Waldegrave: I led the United Kingdom delegation at this meeting, which was held on 28 November.

On the draft directive on polluting emissions from vehicles the Council reached substantial agreement on a range of points left outstanding from its meeting in June 1985; this is, however, subject to general reserves by the two other member states and to a parliamentary

reserve by the United Kingdom.

The Council discussed the chapter on the environment in the Commission's Green Paper on "Perspective for the Common Agricultural Policy", giving a general welcome to the Commission's proposals: and held a preliminary exchange of views on the designation as European Year of the Environment the 12 months beginning on 21 March 1987.

Other items discussed include draft directives on the discharge of dangerous substances to water, the sulphur content of gas oil; a Community information system for the control and reduction of pollution caused by hydrocarbons discharged at sea; the use of sewage sludge in agriculture, pollution by waste from the titanium dioxide industry, and a proposed regulation establishing a scheme to provide forests in the Community with increased protection against fire and atmospheric pollution.

(Hansard)

Atmospheric Pollution

Mr. Ron Davies asked the Secretary of State for the Environment if he will give a timetable for publication of the results of studies being made by (a) the acid waters review group, (b) the acid soils review group and (c) studies on ozone made at the energy technology support unit at Harwell.

Mrs. Rumbold: I expect to receive a report from the Acid Waters Review Group early in 1986. There is no acid

soils review group but the Atmospheric Effects Review Group is considering the effects of acidity on terrestrial systems: I expect this group to report in the latter half of 1986. The Department of the Environment is now funding detailed modelling studies on the generation and occurrence of atmospheric ozone and has set up a Photochemical Oxidants Review Group: I expect this group to report in about 18 months.

(Hansard)

Acid Rain

Mr. Ron Davies asked the Secretary of State for the Environment if he will list those research projects receiving Government support for the investigation of acid deposition on (a) wildlife, (b) agricultural ecosystems and (c) buildings and structures and state the sums involved.

Mrs. Rumbold: The following is a list of research projects in my Department's current research programme relating to the effects of acid deposition on the natural environment and buildings:

<i>Research project</i>	<i>Total cost £</i>
1 The effects of acid rain on upland soils and streams	244,200
2 Chemical inputs from precipitation and their effect on a catchment	129,000
3 Effects on acidification on lakes and streams in Scotland	147,000
4 Effects of acid rain on plants and soils	569,000
5 Effects of afforestation and land management on the acidity of 5 catchments in Wales	272,000

6 Effects of acid rain on freshwater eco-systems in north-west England	176,000
7 Effects of acid deposition and photo-oxidants on trees	184,000
8 Aspects of pollutant attack on limestone buildings	49,000
9 Degradation of building materials in the presence of air pollutants	70,500
10 Identification and assessment of materials damage by air pollution	25,500
11 Effects of atmospheric nitrogen compounds on natural vegetation	87,200
12 Effects of low temperature fluctuation on the sensitivity of crops and trees to air pollutant damage	67,000
13 Effects of air pollution on metallic materials	150,000
14 Pollutant take-up and stone decay in southern Britain	27,000
15 Effects of acid deposition on vertical surfaces	19,500
16 Development of methodologies to evaluate stock at risk from air pollution	10,700
Total	2,227,600

I understand that the following relevant research projects are also receiving Government support

<i>Project</i>	<i>Total Cost £</i>
Scottish Office, acid deposition at Loch Dee	75,000
Welsh Office, ecological monitoring of acid rain in Wales	32,000
Ministry of Agriculture, Fisheries and Food, the	

response of barley to sulphur dioxide at concentrations controlled by fumigation 65,200
Forestry Commission, effects of ambient levels of air pollution on tree growth in rural areas *

* This work is being undertaken directly by the Forestry Commission. The capital cost of equipment is £190,000 and about 2½ man years effort a year will be required.

(Written Answers, 11 November 1985 Hansard)

Water

Mr. Chris Smith asked the Secretary of State for the Environment why, under article 20 of the European Community directive (80 778/EC) relating to the quality of water intended for human consumption, he has applied for a delay on lead for four years and on all private water supplies for 10 years for the United Kingdom as a whole, rather than specified geographical areas thereof.

Mr. John Patten: The Government's response of 1983 to the ninth report of the Royal Commission on environmental pollution set a target date of December 1989 for reducing lead concentrations in drinking water to acceptable levels. Our application to the European Commission under article 20, which is consistent with that policy, relates to Scotland, Wales and Northern Ireland and to the areas covered by the Anglian, Severn-Trent, North West and Yorkshire water authorities where major improvement programmes are still under way. These programmes will be substantially complete by the target date.

Private supplies, although only serving

1 per cent. of the population, are spread throughout the country and in general do not constitute a serious health risk. District councils have a duty to ascertain the wholesomeness of private water supplies and powers to ensure that action is taken to secure improvement when necessary. The article 20 application does not relate to private supplies serving more than 500 people.

(Written answers, 16 December 1985 Hansard)

LORDS

Air Pollution European Protocol

Lord Melchett asked Her Majesty's Government:

Whether they will list those countries which signed the 30 per cent. protocol on reducing sulphur emissions, at the third session of the United Nations Economic Commission for Europe Convention on Long Range Transport of Air Pollutants in Helsinki this year.

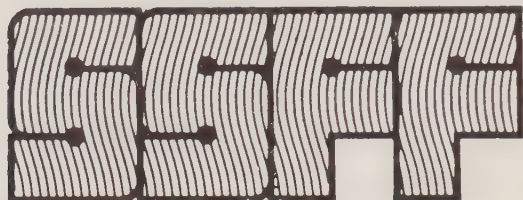
The Minister of State, Department of the Environment (Lord Elton): The countries are: Austria, Belgium, Bulgaria, Byelorussian SSR, Canada, Czechoslovakia, Denmark, Finland, France, Germany, Hungary, Italy, Liechtenstein, Luxembourg, Netherlands, Norway, Sweden, Switzerland, Ukrainian SSR, Union of Soviet Socialist Republics.

19 November

STOP PRESS

The House of Commons Environment Committee took further evidence on acid rain in November 1985. A follow-up report is to be issued early in the New Year, and will be reviewed in the next *Clean Air*.

SOLID SMOKELESS



FUELS FEDERATION

The Solid Smokeless Fuels Federation is a non-commercial, independent advisory organisation representing the interests of the Producers and Distributors of domestic Solid Smokeless Fuels:

**National Coal Board,
Low Temperature Coal Distillers'
Association
Coalite PLC
Rexco Limited
Independent Coke Producers' Association
Coal Merchants' Federation of
Great Britain
Co-operative Fuel Trade Association**

The Federation's primary aim is to encourage and develop the use of Solid Smokeless Fuels for domestic heating.

Since the introduction in 1956 of the Clean Air Act, its work has been and still is closely linked with local Authorities, encouraging the installation of appliances designed to burn approved Solid Smokeless Fuels.

SOLID SMOKELESS



FUELS FEDERATION

**DEVONSHIRE HOUSE, CHURCH STREET
SUTTON-IN-ASHFIELD
NOTTINGHAM NG17 1AE
TEL: MANSFIELD (0623) 550411**

INDUSTRIAL NEWS

ASBESTOS REMOVAL AIDS Newspace Decontamination Unit

The Newspace Mobile Decontamination Unit has been designed to meet GLC and HSE standards. It is constructed on a heavy duty twin axle chassis, with the outer skin and under drawing of heavy galvanised sheet. The special feature is a central shower section which prevents operatives passing from the 'Dirty' (decontamination end) into the 'Clean' area without passing through the shower. A gas wall boiler is installed in its own compartment with external access to provide hot water to showers and washing facilities, and consequently the boiler equipment does not become contaminated. The boiler also supplies hot water to the radiators which are easily cleaned.

The internal finish is expoxy resin to the appropriate colour coding used in this industry. Special facilities incorporated in the design deal with contaminated garments and masks, thus eliminating decontamination of the 'Clean' end of the unit.

The 110 volt negative pressure fan in the 'Dirty' end draws air through a prescribed air flow pattern from the 'Clean' end. With its own built-in 110 volt generator and gas storage unit, it is self contained except for connection to a water supply and filtered waste outlet for waste water.

All doors are self closing with audible warning to prevent them being acciden-

tally left open. The 'Clean' end with lockers for external protective clothing, wash hand basin and seating, complete the unit. A very complex and sophisticated unit which NEWSPACE are confident meet the demanding requirements of the Health & Safety Executive.

Reader Enquiry Service No. **8528**

Negative air pressure monitor

To contain airborne asbestos dust within the sealed off area, the tent must be maintained at a negative pressure, between 0.05" — 0.10" WG by a combined fan/filter unit. For some time it has been recognised that the negative pressure must be constantly monitored to ensure that the airmover is operating properly.

Equipment capable of measuring such minute pressures has been available for many years but it is bulky and intended for laboratory rather than site use. Consequently safety related to this aspect of asbestos removal has been rather uncertain. Any of the following situations could eliminate the pressure differential: open air lock, poor tent sealing, rupture of the tent membrane, excessive wind pressure, volume control damper closed, loss of electrical supply to the airmover, excessive back pressure on the airmover outlet, airmover fan failure, clogged main or pre-filters.

Torchcross Environmental Ltd., a company close to the problem in that

they manufacture a leading range of air-movers, have now developed a compact electronic Negative Pressure Monitor which works within the necessary pressure range to detect variations, display present status and give audible and visual warnings if pre-set limits are exceeded.

Operation of the monitor is extremely simple, it can be set up for use in a matter of seconds and can be situated at any distance up to 100 metres from the working area, connected by small bore air hose. Electrical supply may be 220V, 110V or rechargeable internal battery. Units requiring external supply have an optional standby battery pack capable of 10 hours operation in mains failure conditions.

Displayed on the face of the monitor are 2 digits preceded by the decimal point — these read points of an inch WG pressure differential across the tent membrane. In addition, a pair of green LEDs will indicate safe working conditions, or a pair of red LEDs plus a warning buzzer will indicate too little pressure differential. Touch sensitive switches are provided to silence the buzzer and to initiate a test cycle.

Operation pressure range is .00" to .15" WG with 1 bar overload capacity. The red LED numeral display has characters 0.43" high.

The basic piece of equipment, which measures 300 x 150 x 100 mm, is a completely self-contained setting up and monitoring tool but it can also form the centre of more comprehensive systems to sound warning klaxons, or to provide automatic control of boost fans and airmover damper settings.

Reader Enquiry Service No. **8529**

Microfoam dust control system now available in UK

Dust from mineral processing, grinding and quarrying operations is a recognised health hazard and techniques for controlling or collecting are either expensive (e.g. mechanical separation or filtration) or involve unsatisfactory water sprays which add high levels of moisture to the product.

The Deter Company Inc. of Burgin, Kentucky have developed a Microfoam product which can be applied to mineral products to arrest and control dust levels, but less than 2.5 litres of water per tonne of material is required for full treatment.

The equipment to produce Microfoam consists of a metering unit which controls the flow of compressed air, water and surfactant to a foamer unit (patented) and hence to a foam nozzle. Output, depending on the size of the unit, can vary from 0.03m³ to 4m³ foam per minute. Depending on the material being treated, from 0.2 — 0.6m³ foam per tonne will be required.

Microfoam is unlike any existing large bubble foam system. It consists of stable uniform foam bubbles. Shaving foam is coarse by comparison. In depth research and over two hundred installations in a wide range of industries have proved the effectiveness of MICROFOAM. The Deter systems can be used on belt conveyors, screw conveyors, crushers, free falling material, and will continue to control dust through all subsequent handling operations.

Deter equipment is now available in the UK through appointed agents F.W. Parrett Limited, 33 Lingfield Crescent, London SE9 2RL, Telephone 01-859-3254.

Reader Enquiry Service No. **8530**



Electricity-the good neighbour

Power with preservation.

Modern living calls for lots of power. That means power stations and power lines.

But people care about the quality of life and of their landscape too. So does the CEGB. That is why, as a good neighbour, the Board has received more than 50 awards for keeping the lowest of profiles. By moulding its structures into the countryside.



Central Electricity Generating Board
Sudbury House, 15 Newgate Street, London EC1A 7AU

NOX

Air Pollution? TOXIC Gas?

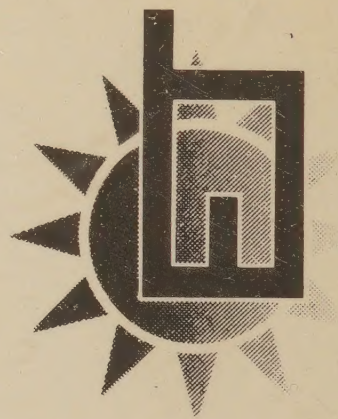
SO₂H₂S

Hydrocarbons

Organic Vapours

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